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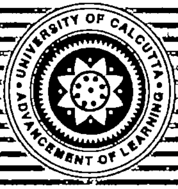

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SCIENCE, SCIENCE HISTORY AND CONTEMPORARY DISCOURSE

B. K. Roy Burman

There are many connotations of the word science. Broadly Science is systematically organised knowledge, tested logically or emplically. Dewey described the concern of science as "to inquire, to discriminate, to draw conclusions on the basis of independent evidence". There is however a growing trend among the historiographers of science, sociologists and anthropologists to differentiates between science as a body of knowledge comprising a set of laws, theories hypotheses and observations and the pursuit of science in specific political economic and cultural milieus.

Anthropo-philosophy of science

Merton is one of the eminent sociologists who has examined the reciprocal relation between science and society while the role of science as a dynamic force of social change has long been recognised, the consequences of diverse social structures on the pursuit of science have generally escaped attention. More than a century ago Engels in "Dialectics of Nature" observed that the science of nature was a social phenomenon. By about the turn of the century even the most outstanding non-Marxist scholar of the time, Max Weber observed that "the belief in the value of scientific truth is not derived from nature but is a product of definite cultures". Amplifying the point, Merton points out that during the Nazi period, the sentiments of national and racial purity had prevailed over utilitarian rationality. The Rector of Heidelberg University announced at that time that "the question of scientific significance (Wissenschaft lichkeit) of any knowledge is of quite secondary importance when compared with the question of its utility." Merton however tries to even act the fulcrum of cognition by a guarded observation that even utility requires the scientist to hold on to a minimum norm of science so that it can be enlisted in the service of the state and industry, thought the emphasis on utility may lead to a limitation of research in pure science.

It would however be incorrect to think that the experience during the Nazi regime, though manifested a repulsive manner, is completely as Isolated episode in the history of science. As early as the 17th Century Hobbes argued about the need of pervasive role of state and also perceived the role of science as the lever to power. It is therefore not unnatural that the rate of development and foci of interest of science as much, or of the disciplinary areas of science, would be influenced by the social structure. But Merton does not rule out the possibility of the very content of science being influenced by the social structure. There is however some amount of reluctance among the scientists to admit this fact. Merton describes this reluctance to an apprehension that this would jeopardise the autonomy of science. In the words of Merton "perhaps it is believed that objectivity, so central a value in the ethos of science, is threatened by support for society, that the measure of this support and the types of research for which it is given, differs in different social structure as does the recruitment of scientific talents. There may be something here of the sentiment that science remains the more pure and unsullied if it is implicity conceived as developing in a social vaccum". "or perhaps the reluctance comes form the equally mistaken belief that to recognise these connections of science and society is to impugn the disinterested motives of the scientist. Their recognition may seem to imply that the scientist seeks, first and foremost, not the advancement of knowledge but the aggrandizement of self the error lies in mistaking the level of motivational analysis for the level of institutional analysis. Scientists may be most variously motivated-by a disinterested desire to learn, by hope of economic gain, by active (or as Veblen calls it, by idle) curiosity, by aggression or completion, by egotism or altruism. But the same motives in different institutional settings take different social expressions, just as different motivations in a given institutional setting may take approximately the same social expression. In one institutional context, egoism may lead a scientist to advance a branch of science useful for military arts, in another institutional context, egoism may led to work on researches with apparently no military use To consider how and how far social structures canalize the direction of scientific research is not to arraign the scientist for his motives".

Like Merton T. S. Kuhn also entertains an ambivalent attitude towards the enterprise of science-but tilting more towards the negative pole. In his "Structure of Scientific Revolution" he expresses the view that between the ideology of science and the realities of scientific practice there falls a vast shadow. The model of science which Kuhn sees as emerging from a study of the history of science, in terms of his rather vague notion of 'paradigm', which includes the following (a) shared symbolic generalization (b) models (c) Values (d) metaphysical principles (e) exemplars or concrete problem situations. In other words a paradigm is a shared understanding or model that emerges in a scientific discipline that is involved to guide research and teaching in that discipline. It involves a belief in cause and effect relationships in science and about standards of practice and behaviour in organizations. In case of revolutionary science when basic structures of theoretical matrix are questioned the proponents of two competing paradigms face each other over the barricade without agreement on the principles governing the choice between the paradigms-since the theories embedded in the paradigms cannot be directly compared, there is no possibility of providing a rational explanation of scientific change. Kuhn offers Newtonian and Einstenian mechanics as specific examples of incommensurability. For the scientific community acceptance of a new paradigm is hardly a mechanical process based on certain rule and method but involves intangible considerations like aesthetic appeal, neatness, simplicity etc. Besides while the process of normal science is more or less mechanical, the process has nothing to do with the objective, value free ; apprehension of reality that Bacon advocated On the contrary nature is approached in terms of categories and concepts supplied by the paradigm, and the data are worked upon through the ideal problem situations and experimental procedures offered by the paradigm. The scientists perceptions during his normal activity is so conditioned by the paradigms that it can be said that not only normal science, but the scientists world itself is constituted by the paradigm.

Summing up Kuhn's position Bajaj however rues that even after exposing the influence at non-mechanical cultural and personal factors in the crucial stages of the history of science, Kuhn holds on to the ideal that modern science is somehow a uniquely valid representation of reality.

Feyerbend, who has been described as a passionate liberal, in his tract "Against Method" goes-not one but several steps further. He argues that science is just one tradition among many. It is privileged neither in terms of method, nor in terms of result and in view of this, he suggests that science is to be removed from its pedestal and efforts should be made to create a society in which all traditions have equal access to power and education. Feyerbend is more radical in his critique rationalism than Kuhn, who holds that there are rules held in common by all members of the scientific community, though the application of rules may be problematic and the rules cannot always be given an objective justification. For Feyerbend, science is just an ideology, and no rules having any real content or force can be abstracted from scientific practice. One recognises in Feyerbend's credo, the echo of post-modernist thunder. Here is to be clarified that post-modernism is a cultural and critical movement that took form after the second world war, and which advanced modernism to its final conclusion, namely that no authoritative and definitive expression or conception of realty is possible.

Based on an elaborate case study of an advanced science laboratory, Lataur and Woolgar claim that modern science findings are essentially man-made artefacts, ratified by authorised science conventions rather than through direct correspondence with nature.

Briskman draws attention to the fact that though traditionally it is thought that rationality reigns supreme in natural science. there exists a striking diversity of theories, as to how rationality in general and rationality in science in particular are to be characterised and understood. Even worse, it is unclear how these disagreements may be settled rationally.

To save classical view of rationality from dogmatic and fideistic consequences intellectualism and empiricism arose in the early phase of enlightenment in Europe. According to intellectualism, sceptical reason is stemmed by axioms that are seen clearly and distinctly to be true by an infallible faculty of reason. Descarte (1596-1650) called it "natural light".

In contrast Bacon focused on experience, not logical argument Descarte's rationalism and Bacon's empiricism (also identified with Locke) were taken to be rivals ; but both were optimistic in maintaining that truth would manifest itself either to reason or to sense.

Both the views are individualistic in holding that every individual possesses all the necessary equipments of reason or sense, also both are egalitarian in holding that all individuals possess these equipments in equal measure. Besides both are radicalist or anti-traditionalist.

Bacon's empiricism historically faired better as a result of Newton's insistence that his discovery of laws of motion and of gravitation was based upon experience and induction ; yet Hume (1711-76) claimed in his Treatise of Human Nature that justifications empiricism is inconsistent with the inductionist acceptance of a principle whose own proof or justification cannot upon experience.

Then there are probabilists who accept that observation and experience might be too weak to provide rational proof that universal laws or theories are true, but they insist that this does not automatically establish that laws or theories cannot be supported by any empirical evidence. Kant in his critique of pure Reason (1781) showed that pure reason leads to antinomies or contradictions , it could not therefore be a source of knowledge of Reality. Hegel responded to Kani's criticism of rationalist metaphysics with the reply that since Reason contradicts itself and since the Real is rational, Reality must contain contradictions Hegel's philosophy is dialectical reality which evolves by a process of thesis being confronted by contradictory anti-thesis, whose struggle is resolved by the emergence of synthesis.

Popper's view of science is fallibilist. There is no certainty in science, not even at the level of empirical or observational 'basic statements'. But unlike probablists he holds that science aims to prove or justify its hypotheses, and that since proof or justification can never be perfect so that certainly in science can never be reached. Popper's fallibilism is quite different : he rejects not only the possibility of attaining certainty, but also the quest for it. His fallibilsm rests not on the impossibility of perfect proof but on the constant necessity for detecting errors, and on the conscious adoption of methodological policies designed to help us detect them.

According to Popper the method of science is that of trial and error, of conjecture or hypothesis and of the detection and elimination of those that are in err. The conjectures themselves are not rational, rationality resides solely in the (socially institutionalised) method of error-detection and elimination of the same. For this logical argument is crucial, by logical reasoning from the conjectures, we attempt to discover the errors they contain and by logical reasoning from such discovery of the falsity of the conjecture, we eliminate it as a candidate for the truth.

Popporian perspective exercise considerable influence in the historiography of science. But even many, who are not necessarily post-modernists, point out that there is an inbuilt unreality in his perspective Science establishments, like any other establishment, tend to be conservative and are not open to easy correction on detection of error. Vandana Shiva points out how reductionist science cuts off its practitioners from each other in the name of specialization and also pushes into the scientific unconsciousness those scientific findings which go against the grain of the dominant culture of science Nandy takes the point further by observing that whereas earlier State used science as a source of power, after the second world war it is the science establishment which is gaining upper hand over the State. On the same wavelength Veena Das implicity underlines the need of examination of the way any system of knowledge becomes a new source of violence and oppression, once it has acquired power or the capacity to bestow power.

The practitioners of science have not however let such attacks go unchallenged. The confrontation was dramatically brought on the focus by Alan Sokal, a theoretical physicist at New York University. In Autumn 1994, he submitted an essay to Social Text, a leading cultural studies journal, published by prestigious Duke University press. Entitled "Transgressing the Boundaries : Toward a Transformative Hermeneutics of Quantum Gravity" the essay purported to be a scholarly article about "the post-modern philosophical and political Implications of developments in Quantum gravity," a highly and still apoculative field of physics". After review by the members of social Text's Editorial Board it was published in a special issue of the journal in April 1996. Immediately after this issue of Social Text hit the news stands Sokal revealed that his essay was actually a parody of the genre of cultural science studies critiques, to carry out an academic humanities'. He had deconstructed quantum gravity in a "nonsensical manner" by stringing together extensive and duly attributed quotations from leading theorists of postmodernism, feminism and science studies. Bruce Robins, one of the editors of Social Text later admitted, part of the reason why he and his colleagues agreed to publish Sokal's essay, even though they did not understand the complexities of quantum physics, was because its arguments and conclusions 'devetailed with post modern philosophy'. While this episode has raised a tornado of controversy-ethical and epistemological, it is difficult to say that it really proves anything.

To Sokal the essay may appear non-sensical, to Robins some of the theoretical premises may appear to be beyond him or other members of the Editorial Board, but if to many readers it makes sense, is it necessary to accept Sokal's assessment of what he has written? One may not be unjustified to think that Sokal has made a parody of himself in what he published in Social Text.

In a more sober manner Sokal has expanded his deference of "scientific world views" vis-a-vis post modernist challenge to it in his article 'Truth, Reason, Objectivity and the Left' (EPW April 18, 1998). He defines scientific world–view broadly "as a respect for evidence and logic, and for the incessant confrontation of theories with the real world, in short, for reasoned argument over wishful thinking, superstition and demoguery". One may not be too sure whether it is "scientific world view" to prejudge alternative ways and to look at things in the way that Sokal has done. Sokal gives an illustration. The Scientific consensus, based on extensive archaeological evidence is that humans first entered the Americas from Asia about 10-20,000 years ago, crossing the Being strait. Many native American creation accounts, hold on the other hand that native peoples have always lived in the America into the surface of the earth, from a subterranean world of spirits. Sokal quotes a times article which mentions that many archaeologists "pulled between their scientific temperaments and their appreciation for native culture, have been driven close to post-modern relativism in which science is just one more belief system" Sokal quotes Roger Anyon, a British archaeologist who has worked for the Zuni people, to the effect that "science is just one of many ways of knowing the world. The Zuni's world-view is just as valid as the archaeological viewpoint of what prehistory is about", Sokal also mentions that this particular example has been analysed by Philosopher Paul Boghassian in Times Literary Supplement (December 13, 1996) where the latter states that "the phrase 'just as valid' can be read in at least three different ways" as claim about truth, as a claim about evidence, or as a claim about purpose. Boghassian argues persuasively that on none of the three readings does the relativist view hold water". The article of Boghossian is not available with the present writer. But Sokal would have sounded more objective if had indicated whether the purpose that is served by the archaeologist's scientific claim and a Zuni creative myth is same or different. If the purpose are different, both the claims may as well serve valid roles. Many of the Christian ontological beliefs are not valid in terms of "scientific" knowledge, but certainly they serve valid purposes.

The term Sokal and many others use for such phenomena is relativism ; perhaps the better term would be rationalism (or contextual) or pluralism.

Meera Nanda in her article "Reclaiming Modern Science for Third World progressive Social Movements" (EPW, April 18, 1998) has examined the debate in some detail.

Nanda refers to post-colonial sponsors of the cluster of theories that go under the name of ethno-science's "stand-point epistemologies" and natural knowledge-theories that claim that modern science is simply an ethno-science of the west, its truths not any more rational and Universal than any other local knowledge of any other culture. These constructivists claim to study how the social prejudices of the day make up the so-called 'fact'. Nanda clubs together post-colonial critics of science and post-modern critics of science and summarises their position by patches. According to her both hold as their first principle that the standards of evaluation of truth and rationality of knowledge, and Indeed, reality itself, is constituted by a culture's assumptions and ways of seeing the world. Cultural meanings are unique and incommensurate, that is, are valid only relative to their own cultural assumptions. Culture on this reading, lies at the heart of our most reliable, most well justified knowledge. With a brief interlude about conventional science position, Nanda observes that constructivists of both western and post-colonial variety believe that science's claim to go beyond the social biases and cultural meanings to bring us closer to the reality is a myth, and scientific truth, like any other traditional ethno-knowledges, is nothing but consensus and obtains around dominant cultural meanings. Following this logic, the supposed universality of scientific facts derives from the hegemony of western culture which fore-closes other ways of looking at evidence and coming up with alternative universality's.

As regards the point of view of the working scientists and traditional philosophers of science, Nanda observes that they believe that science "can break through prevailing cultural assumptions and common sense, and give us reliable knowledge of the real world justified by independent evidence sought with openness to potential refutation. If there is anything that is absolutised by scientific reasoning, which the critiques redicule as big R-Reason it is this demand for a scrutiny by doubt, a demand that we subject our believes to tests not under the control of the same beliefs". Nanda alleges that constructivists of both western and post-colonial varioty do not accept science's claim of going beyond the social biases and cultural meanings and consider the claim to bring us closer to the reality as a myth.

Nanda felt flabbergasted by the position taken by the post-modernist and post-colonialists. But she is on a weak wicket when she clubs together post-colonialists of all type and the post-modernists. In her article she herself says "Hardly anyone but a few die-hard positivists deny that science has cultural roots". Also she observes "Top heavy, technocratic development agencies did not give the folk expertise accumulated over centuries any benefit of the doubt. Young, brash modern experts could and have a tendency to ridicule traditions as superstitions. Scientific truths were accepted as dogmas.

The post colonial science critic, to their credit, have changed all that : they have insisted that the voice of the displaced and the traditional be heard, that culture not always give way to technocratic reason. Likewise, their insistence that traditional meanings that people live with have legitimacy that cannot always be over-written by scientific reason. For all my criticism of their excesses, I applaud the science critics for bringing the repressed other of modernity to the centre stage". Nanda goes further and states that she is all for challenging technocracy and scientism and "even for defending traditional ways of relating to the world against scientific rationality". And then she observes that these should not be the ground for rejecting science as such.

She is both right and wrong. She is right when she states that science as such is not to be rejected. But do all post-colonialists reject science as such? What they generally reject is the exclusionist claim of validity of the practitioners of science of their point of view in human's negotiation with their life situation. And the justification of such rejection is given by the science historians themselves and even by Nanda in her article under reference. The practitioners of science display the ideal-typed "scientific temper" which is so much projected. Very frequently it is not science but the practitioners of science and the application to which science is put, at the behest of the power that be, which is rejected. Besides, if the post-colonialists dub science as western, to some extent at least the dominant establishments of science is responsible for this. To understand this one is to look at the history of science as generally presented by the science establishments and as perceived by the post-colonialists.

History of Science :

Beteille (EPW 7.3.1998) draws attention to the fact that colonial rulers had denigrated the intellectual achievements of India. There is no entry in the current edition of the Encyclopaedia Britannica on Aryabhata, Bhaskara or Panini even though there are many such entries on western scholars of a lesser stature. This however is not an isolated case. Lven Kuhn, the best known critic of several abenations of modern scientific enterprise claimed in 1970 that the descendants of Hellenic civilization alone were able to arrive at the correct societal epistemological formula that would ensure the development of anything more than the most rudimentary science (Bajaj 1996 p. 55).

It is no wonder that post-colonialists speak of Western science. The scientific achievements of Europe have been recorded and blown up in umpteen number of publications. These need not be repeated here. Some of the achievements in India and China would be briefly stated here.

Stecherbatsky (1982) observes that in India the earliest system that is fit to be called scientific is Samkhya. According to it, in the beginning of the universe, we have only one shapeless, indivisible, unbounded, all pervading, indestructible, eternal primeval matter which none has created and none controls, But its unity and immobility is caused by the fact that the forces flowing in it are linked in a system of equilibrium. When this equilibrium is destroyed under the influence of undermined transcendental causes, the primeval matter is found to have three different constituents i.e. the constituent mentioned above, which is capable of developing into consciousness, the opposite constituent of inert and the active constituent of forces or energies, under the influence of which the whole process takes place. All the three constituents mass, energy and the conscious-are inseparably linked to each other. The primeval matter is a continuous limitless substance consisting of infinitely small particles of these three interacting constituents.

Unlike in the atomistic system, evolution does not take place here by accumulation of atoms. There are three stages of Infra-atomic development and the atom is not the first one. Even atom has all the three universal constituents of primeval matter. The evolution generally takes place in the matter as a whole, it is described as the process of transformation of homogeneous, determinate and organised bodies. In the process of evolution nothing is added or taken off, matter can be neither created nor destroyed. The sum total of matter as a whole-its three constituents- ? The elements of matter are in eternal motion, which cannot stop even for a single moment. Any material process-any growth or decay-is nothing but a redistribution of the particles of matter, its transition from the past to the present, from present to future or from potential to actual state. The redistribution of mass and energy gives rise to all the diversity of the material world, plants and animals.

In the Vaisesika system the atoms are divided into complex having minimum dimension, and simple or dimensionless mathematical points. In this system sound, and its corresponding element, ether, do not have atomic structure. Ether only fills the empty space between the dimensionless points of simple atoms. Atoms cannot exist freely without combination with others.

In Jaina system each atom possesses taste, smell, colour, temperature and other special tangible qualities which can cause amalgamation of atoms forming new bodies. Two homogenous atoms however cannot blend together. One must be, so to say positive and the other negative.

In Buddhist system, strictly speaking there is no matter ; there exists only forces. They negated the existence not only of God and soul, but also of every substance. The soul was replaced by separate mental elements or ideas and matter by individual forces. The flashes of these forces were linked to each other in the regular whole of the universe only by the fact that their appearances or flashes were regulated by laws of strict causality. Just as the light of a lamp appears to an observer as a lasting object-in reality, there is a new flash of light every moment, similarly all other material elements, namely colour, sound, taste, and touch are nothing but a chain of recurring flashes. Thus an atom is nothing but a momentary flash, appearing according to specific laws in relation to all other flashes, which the world consist of.

Seal (1982) has discussed in some detail the philosophy and the methodology of science in ancient India. A brief synopsis of the same is presented here. The ultimate criteria of Truth is found not in mere cognitive presentation, but in the correspondence between the cognitive and the practical activity of the self, which together are supposed to form the circuit of consciousness. The Buddhists contend that the material aspect of Truth is not self-evidence, not the agreement between ideas, not the agreement of the idea with the realty beyond, if any, for it cannot be attained direct, but the harmony of experience which is implied when the volitional reaction, that is prompted by a cognition and that completes the circuit of consciousness, meets with fruition i.e. realises its immediate end.

The conditions of perception, and its range and limits, were carefully studied. The minima sensible (e.g. the minimum visible) the infra-sensible, the obscured and the potential were distinguished but finer instruments of measurement were wanting and according to Seal, this was a principal cause of arrested progress.

The entire apparatus of scientific method proceeded on the basis of observed instances, carefully analysed and shifted. This was the source of physicochemical theorises and classifications. But in anatomy the ancient Indians went one step further, they practised dissection on dead bodies for purposes of demonstration.

Experiments were conducted for purposes of chemical operations in relation to the arts and manufactures e.g. metallurgy, pharmacy and so on.

Malobservation and non-observation were carefully studied in relation to errors of observation, and hallucination. These were ascribed to three causes (a) Dosha or defect of the sense organ (b) Samprayoga or presentation of or as aspect instead of the whole and (c) Samskara, the disturbing influence of mental predisposition e.g. expectation, memory, habit, prejudice etc.

Inference was an important element of scientific pursuit. It is the process of ascertaining, not by perception or direct observation, but through the instrumentality or medium of a mark that a thing possesses certain characters. Inference is therefore based on the establishment of an invariable concomitance (vyapti), between the mark and the character inferred. Inference in this system is therefore neither merely formal nor merely material, but a combined Formal-Deductive-Inductive process. It is neither Aristotelian syllogism (formal deductive process) nor Mill's induction (material-inductive process), but the real inference which must combine formal validity with material truth, inductive generalisation with deductive particularism.

There are four schools about the validity of asserting a Universal Real proposition on the basis of our necessarily limited observation.

Among the carvakas there are two classes. The crude school of materialists accept perception (pratyaksa) as a valid source of knowledge as well as the reality of natural law : there is also the finer school of sceptics, who impugn all kinds of knowledge, immediate as well as mediate, and all evidence, perception as well as inference.

The Buddhists however take their stand on the principle of the Uniformity of Nature. This Uniformity for scientific purposes has to be divided into two relations (i) uniformity of succession in the relation of cause and effect (ii) uniformity of coexistence (in the form of co-inference in the same substrate) in the relation of genus and species (e.g. co-inference of the generic qualities of a tree with the specific character of a Sisu-tree without implication of causality).

The Buddhist (and the earlier Nyaya school) however avoid the difficulty arising from the plurality of causes by taking into consideration the accompanying phenomena, which if properly marked would always point to a specific cause of a specific effect, and vice versa. The later Buddhists formulated the canon of a modified method, termed the pancakarani or a joint method of difference, which combines the positive and negative methods of difference (the methods of addition and the method of subtraction) in a series of five steps, and which equally emphasises the unconditionality and the immediateness of the antecedence as essential moments of the causal relation. Seal considers this methods as belonging to the same genre, (though different in content) as J.S. Mills Joint Method of Agreement-in-presence-as-well-as-absence. While pancakarni shows only how in a particular case the relation of cause and effect is to be established, it does not indicate the process. The Buddhists therefore supply the following proof of method : Doubt is legitimate, but there is a limit to doubt. When doubt lands you in an unsettlement of a fundamental ground of practice, and would thus annul all practical exercise of the will, the doubt must cease ; or else doubt would be suicidal or sophistical.

The Nyaya school along with the Carvaka scepties however in their critique of pancakarani point out that the unconditionality of the antecedent cannot possibly be ascertained. Carvaka particularly points out that the methods enable one to eliminate irrelevant antecedents that are or can be perceived ; but the introduction or sublation of latent or undetected antecedents can be imagined, against which the Method of Difference is powerless. Besides even when the cannon of plurality of causes is accepted, one cannot be sure that the particular assemblage is the only valid assemblage, if one goes by the Joint Method of Difference.

The Nyaya school takes the position that certain phenomena are naturally connected (as invariable concomitants or antecedents) with other phenomena, and one should take one's stand on observed concomitance (uniform and uninterrupted experience of agreement in presence as well as absence) without assuming causality as an apriori principle and making deductions therefrom. Nyaya school at the same time speaks of co-effects and synchronousness of cause and effect. Inference then in the Nyaya, depends on the ascertainments. not of the causal relation, not of the genes to species but of a natural relations, between two phenomena of invariable and unconditional concomitance.

In view of great concern evinced by the different schools of thought in India, in conceptualising the patterns of relationship among perceived phenomena it is not surprising that the greatest progress that the Indians made in science was in the fields of mathematics, especially algebra and arithmetic. They invented a system of calculation by figures to which values were assigned depending upon their relative position alongside other figures. The most important step in the system of figures was the invention of zero which one comes across in the fifth century A.D. It might have been invented earlier, but like other Indian inventions was kept a secret. The Indians later passed on this invention to the Arabs and through them to the whole civilized world.

Stcherbatsky observes that it is not merely a matter of chance that the concept and symbol of zero together with the whole decimal system of figures were invented in India and not anywhere else "Comparing the Indian mathematics with all other Indian sciences-physics, atomic theory, psychology, epistemology, metaphysics we find that the Indian mind always approached the concept of maximum value form all aspects, irrespective of whether the value was intensive or extensive, and that this was the train of thought that ultimately found expression of zero for denoting the concept which had already been prepared and worked out form all angles." One of the later Indian mathematicians has amplified the concept and value of zero as follows. If we go on decreasing the divisor successfully, the quotient will correspondingly go on increasing. If the divisor is reduced to the maximum possible limit, the quotient also increases to the maximum. But so long as the latter has some specific value, however high, it cannot be considered to have increased to the maximum limit, for one can still find a higher value. The quotient is, therefore undefined value, and is rightly called infinite.

Stcherbatsky points out that this is also the modern mathematical concept of maximum value. With its establishment, the transition of Indian science to the field of higher mathematics was completed.

· Proceeding further he notes "we find the same train of thought even in the field of physics-in the atomic theory In the ancient Indian systems, an atom was regarded as the maximum possible value. But so long as it is still a specific value, it cannot be regarded as the minimum. The Buddhist and Brahmanical systems, therefore considered atom as a complex molecule-the result of the action of infra-atomic forces. Such infra-atomic forces are real mathematical points : they are infinitely small and have neither dimension not time, nor value. The real atom is formed by their special integration. We come across a similar course of thought in Indian psychology which states the complex character of even the simplest thought. If in a thought there is no generation, no synthesis of past and present, or of the individual and the whole, it is totally empty-the so-called pure thought, which does not contradict any object, every object being the result of synthesis. Thus every thought, howsoever primitive, is the result of the synthesis of elements which have no psychic content or where the content is infinitely small. This thought is called emptiness or zero ; both the concepts are denoted by the same Sanskrit world **Sunya.** The Indian epistemology and metaphysics both use the concept of maximum value as the point of departure in the formulation of their systems. In this connection, it is not surprising that the Indian astronomy was familiar with the principles of differential calculus. The method employed by the Indians in the 12th Century for finding out the longitude of the planets was closely similar, if not identical to the formula employed in modern mathematical astronomy."

The Indians differentiated between the velocity of a planet measured roughly and measured accurately. The difference between finite time and indefinite or indefinitely small time is also mentioned. The Indian astronomers had a special term for denoting a particular small unit of time, approximately equal to 1/34000 part of a second. For calculating the so-called momentary motion of a planet i.e. the motion during a mathematical moment, Bhaskara compares the successive positions of a planet. For this he regards the velocity of the planet as constant during the respective interval of time. This momentary motion is, therefore, a differential concept-the differential planetary longitude. It is thus clear that the concept itself of the momentary motion and the method of determining it were known to Bhaskara ; he can, therefore be acknowledged as the predecessor of Issac Newton in the discovery of the principle of differential calculus.

Though the progress in the field of mathematics-especially calculus continued in India somewhat longer than that in all sciences, no more distinguished mathematicians are found after the 12th Century A.D.

Joseph Needham has extensively studied the sciences of Chinese civilization alongwith its detailed cultural, social and philosophical background. His conclusions about the Chinese sciences are of interest in the context of kuhn's summary dismissal of the sciences of the non-Hellenic civilizations (Bajaj) According to Needham between the first century B.C. and fifteenth century A D., in many ways Chinese intellectual and philosophical tradition "was much more congruent with modern science than was the world governed by laws laid down by an external God. The primary urge in Bacon was to find a method of deciphering their divine laws, and then playing God with nature and man. Now Needham tells us that for Kepler, Descurte, Boyle and Newton, the laws of nature which they believed "were revealing to the human mind, were edicts which had been issued by a supra-personal supra-rational being. For the Chinese however, there never was any celestial law-giver issuing commands to nature. Nature was self-governed, unfolding itself according to its own internal harmonies. The object of science for the Chinese therefore was not to decipher the law in order to put nature to human use, but to find out the way of nature, the Tao of Heaven, in order to be able to go along with it, to live according to the Tao.

According to Needham such vastly different conceptions of the law of nature in China and the West arose, because of their different conceptions about the role of political authority in society. The Chinese society, except during the draconian authoritarianism of the Chi'n (Chhin) dynasty (221 B.C. to 207 B.C.) never accepted the legalistic idea that the king could dictate law for the people. The political authority could only codify the complex of customs, usages or ceremonies of the people and administer the law accordingly. And just as the Chinese could not tolerate the idea of a terrestrial King laying down the law for the people, they could not think of a celestial authority doing the same for nature. Needham also believed that with these ideas about the political authority, the Chinese also evolved an essentially 'democratic' policy, administered by a non-hereditary bureaucracy to which admission was strictly according to merit. In Europe on the other hand the idea of the positive law dictated by the King came to be accepted rather early. Correspondingly, the idea of a Supreme being dictating laws for natural objects also became a part of orthodoxy.

This idea that natural objects must obey natural laws just as human being obey human laws was so strong in Europe that in that in 1474 a cock was prosecuted and sentenced to be burnt alive for the 'unnatural crime' of laying an egg and there was a similar prosecution in Switzerland as late as 1730.

Much of the rejection of superiority of science claims of the Euro-centric historians by a good number of peoples in non-western countries seems to be rooted in the denial of achievements outside Europe and exaggerated claims for so-called scientific world-view and scientific achievements of Europe.

Continuum and disruption between Science and Technology

The relation between science and technology can be understood at two realms, namely methodological and substantive.

In the methodological realm there are three strands of thought : (a) Science and technology are district projects and though they are inter-related there is no ordered sequence in their relationship (b) technology is but application of science and though there is and ordered sequence, each runs its course through the interplay of a number of factors which need not be common to both (c) science has become a handmaid of the forces that promote technology and thus the mutually reinforcing relation between the two has been disrupted.

At the substantive realm one can examine the changes in technology, the social forces unleashed through such changes which in their turn promote scientific enterprises also.

The methodological realm will be considered first.

Originally scientific endeavour did not go beyond collection of observations or report on geological, meteorological, biological and astronomical phenomena Pliny's (AD 23-79) summary of available writings of various authorities on cosmology, astronomy, lands and peoples, flora and fauna, minerals in thirty-seven books provided a model which the encyclopedia tradition of the Renaissance Humanists, subsequently drew upon Natural history as then conceived has less the character of organised scientific enquiry than that of an empirical data base for such enquiry.

Francis Bacon's methodological reform of learning as presented in his Advancement of Learning (1685) was to systematise the various branches of knowledge in a natural arrangement of learning, relating each form of learning to the primary human faculties of memory, imagination and reason.

Acknowledging his debt to empiricism of Bacon, Newton projected a mechanistic view of nature in a unified frame which covered both terrestrial and celestial phenomena.

Descartes occupies a central position in the natural history tradition, through his presentation, on his Principles of philosophy (1644) of a secular history of the solar system and earth in which the present formation of the earth is conceived as produced by natural mechanism.

But there was also a second focus in the apprehension of the history of nature. The second world-view conceived nature as substantive agency intermediate between God and individual creature. The deeper development of the consequences of this view of nature is seen in the philosophy of Gottfried Leibnitz (1646-1716). As the Leibnitzians viewed, the mechanical philosophy of Descarte, had deprived nature of a concept of 'live force', a concept demanded by the phenomena of mechanics. In opposition to this, the leibnizian conception of matter based on centre of force rather than material extension of mass, gave realty a dynamic character which was applied to nature as a whole. It also restored the Aristotelian concept of an immanent technological agency in nature itself. Leibnizian nature was not an inert system acting by contact action. Instead it followed out an internal, telos-laden career, governed by in-dwelling law, directed to rational end. God's intervention was unnecessary in this system precisely because it carried out by its own power, its divine mandate. In this respect, leibnization nature was at least practically autonomous, and able to fulfill and even create by its own internal dynamism, without divine intervention. For 18th century thinkers able to draw upon these developments, the ideal of a science of nature, distinct from rational mechanics or experimental physics presented new possibilities.

Contemporary historians of science by implication suggest that alienation and oppression are inherent in both the approaches associated with science.

Hessen suggests that the mechanistic view of nature as reified by Newton served well the need of the growing capitalist interest. One can envisage that the logic at the teleological view of nature absolved humans of a sense of responsibility about the consequences of playing with nature. The mechanical world-view gave boost to objectification of nature and manipulation of the forces of nature ; the biological world view of nature tended to substitute the doctrine of predestination by a drift, if not doctrine, of secular determinism, in which humans play only subsidiary role. Berstrand Russell (1918) in his Freeman's Worship took a pessimistic tenor and spoke of the existential predicament of humans when it is recognised that "man is the product of causes which had no prevision of the end they were achieving, that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcomes of accidental collation of atoms ...and that the whole temple of man's achievement must inevitably be buried beneath debris of a universe in ruins."

Pillai (1988) lucidly summarises the position which is reproduced here.

If we trace back modern science in its genesis we come to Galileo and Descarte is the 17th century, Galileo's fundamental postulates on which his questioning of nature was based, was that the Book of Nature was written in numbers and that, therefore its internal structure was mathematical. The novelty of this approach resides in the fact that for the Greeks, the term 'mathemata' has a much broader meaning than the merely numerical. The term designates that which one knows about prior to the actual empirical observation of it. Number only constitutes one of a variety of such 'ta mathemata' and is prominent only because it is possibly the most obvious. What is most significant in Galileo's assumption, is therefore singularity of that what is known about nature prior to actual observation and experiment in its numerical structure. It is this imputation of structure to whatever is-in this case nature-the projection of a ground plan, that is decisive in that, it creates a field of research and science distinguished from medieval science distinguished from medieval scientia, in which the investigations remain more or less discreet. It is precisely such imposition that constitutes essence of technology.

Heideggar argues that while at dawn of modern science nature discloses itself in terms of a ground plan, and thereby determines the concern of science, one is justified to consider that technology (designated in projection which discloses object spheres of research) is fundamentally or essentially prior to modern science. Though chronologically technology as mechanization comes later, it does not invalidate the proposition of Heidegger. Thus modern science emerges under the revealing aegies of technology. This is contrary to the common assumption that the motive power of technology is derived from modern science or in other words technology is the application of science and if technology causes havoc science as such is not responsible for it.

From Heidegger's position it comes out that though science and technology are inter-related it is not a liner relationship, there are twists and turns, but it is also difficult to say that it is a dialectical relationship in Heideggar's perspective.

In contrast Oberoi (1990) draws attention to Engel's non-duelist dialectical approach to science and technology. Engel's papers of Dialectics of Nature written in 1873 were published in 1935. These were more dialectical in thrust than Lenin's Materialism and Emprio-criticism (1909). After consolidating his power Stalin emphasised the unity of the nature, of thought and of society by drawing upon Engels. But after the death Stalin the message of dialectics as the commonalty of nature and history or of science and politics was disowned, and the truth and the power having reverted to the position that emphasised the specific nature and the differences of the two realms.

During the decades of cultural revolution in China, a serious attempt was made to give shape to the non-dualist dialectical attitude, partly through joint party and expert committee attached to all national scientific establishments, and party through two popular slogans "every worker a scientist" "Overthrow all authority in Science". But it seems that the directives that followed effectively exempted the authority of, first nuclear then defence, and soon all natural science-presumably on the principle of privilege of the expert.

The unity of society, nature and science was broken. In this perspective technology is not the application of science ; rather science is the handmaid of technology. This comes out form the fact that in the contemporary world around fifty percent of the scientists are directly or indirectly working for military establishments and another around 45 percent of the scientists are engaged in research in applied science, primarily in industrial or agro-industrial enterprises. Less than five percent of the scientists are engaged in basic research. Keeping this in view Oberoi makes a pertinent observation "If one half of the scientists in the world are servants of the military, which does violence to man, and the other half are servants of industry, which does violence to nature, then the love of man and nature obliges us to try and rescue science form scientists and give it a new and different philosophical directions". As it is, the chances are bleak". Perry reports that persons in applied research are paid higher salary and have better equipped laboratory facilities. They call the shot. Even the basic research is ceasing to be pure research. There is a trend of industries investing in basic research with an eye to long distance possibilities. It is uncertain how it affects their science paradigm of the basic researchers employed by the industries. It is however known that those who are bitten by the bug of conscience are considered as suspect. It is not unoften that they are subjected the with witch hunting.

One wonders whether the scenario that has emerged today is a replication of similar scenarios that might have surfaced even in the past in history. But one singular development is to be noted. In USA Entrepreneurial Universities are emerging. It encompasses a more direct involvement in the commercialisation of research activities. Universities are providing upfront financial support to faculty members with expectation of returns from eventual sale of research outputs.

For a further prove into the matter perhaps it would be better to differentiate technique from technology and both from science.

Technique is the skill to manipulate an object learnt through trial and error. Technology is not only consolidation of a specific skill learnt through trial and error but also a complex of persistent relations with fellow human beings and with the endowments of nature that get associated with a specific skill or cluster of skills. Science is a synthesis of two processes, viz. stimulus to abstraction of concrete observations in diverse contexts (induction from empirical-data) and reflection over the replicative probabilities of similar stimulus in similar situations (deductive logic). Synthesis of the two however does not follow a rigidly laid down procedure. Subjective element of the actor based on personal or group antecedents or cultural orientation or a combination of these plays a role. For instance on Newton's own admission much of his scientific conclusions bore the stamp of his theological mooring.

The early humans who used stone chips or wooden poles or bamboo splits stumbled upon techniques not by application of probabilistic science but by trials and errors. It can be assumed that success in trials and errors, stabilised the use of the technique and technologies as an assemble of technique and relationships got established.

Technology was the mother of science. But once born, science has part autonomy and part dependence on technology. In other words science was and is a social product ; it could run its course normally within ensemble of relationships provided by technology ; and technology in its turn could reify itself by drawing upon science. But there could be quantitative accumulation either in science or technology which generated a qualitative new relationship (internalist transformation), there could also be new stimulus (natural catastrophy for instance) which could bring about a new relation (externalist transformation).

It seems that internalist developments supplemented by the external stimulus in the form new experience, new sources of wealth on the Europeans colonisation of the Americas transformed the relation between the science and technology. Astronomy, meteorology and science projects primarily based on the logic of mathematical system went ahead with galloping speed, helping technology to limp along. But wealth from the colonies and technology of printing press, use of gun powder obtained from China and a number of related developments brought about another qualitative change in the human situation, namely rise of capitalism. Sophisticated scientific discoveries and sophisticated technological inventions went ahead side by side so much so that these were considered to be two sides of the same coin and people started to speak of science and technology.

But nuclear blast during the second world war has disrupted the relation of differentiated unity. Science has hardly any autonomous existence of its own. In the capitalist world order its main function been to keep technology all the time on motion, like a bicycle needing all the time on the motion so that does not tumble down.

History of science is dead. And without history of science technology is Frankestein's monster without its soul, without compassion ; without human presence.

Now has began the era of an epochal struggle between humanism and monstrous technology, so that science can be brought back to life.

Let there be no mistake. The struggle is not between humanism and technology as such ; but between humanism and monstrous technology. Perhaps monstrous technology is also not the right word. Monstrous technology is in fact technology divested of concern for sustained relations with human beings and endowments of nature. The better description would be operational debris of technology in which ensembles of monstrous techniques are stalking vampire like ; stalking around to suck the blood of humanism, human presence, and ultimately all life-forms. Perhaps alternative science movements, post-modernism, post-structuralism and so on are attempts to contain the monster. But each of these has positive and negative elements.

To arrive at the strategy of humanist resurrection, perhaps it would be useful to provide a chronology of march of technology for the totality of humankind in all parts of the world. But the information is not readily available. Whatever is at hand would be mentioned in bare outline.

In 1836 Thomson, suggested a three fold division for human history and prehistory (a) stone age (b) bronze and copper age (c) steel and iron age.

The classification with reference to nature of material used for tool making mean provide the material base for culture, provided that one does not remain bugged down with this idea too rigidly, there is some merit in this approach.

Stone age refers to a period when nothing was known about metal and all artifacts had to be fashioned from such substance as stone, flint, bone, horn antler. ivory etc. and also from wood, bamboo and the material whose relics are not easily traceable But from ashes caused fire evidently used by humans, now it is known that wood and bamboo were useful tools making materials for early humans.

It seems that there is an ethnocentric bias in the interpretation of the culture of early hominid.

Harvard archaeologist Hallam Movius jr, first noticed that the old stone age cultures of East Asia, were lacking in symmetrical, well finished hand-axes that are ubiquitous in the tool making cultures of Europe and Africa. In China and South Asia, one finds smaller, cruder tools, such as the choppers at Ba Thuoc. Movius propounded the view that East Asia was a region of cultural retardation and followers of his view such as Carleton Coon carried it a step further, suggesting that the Asian races were isolated and backward. This view was first effectively reputed by Russian Archaeologist Borikovskii in his landmark publication Vietnam in Primeval Times (1968-70). As avoided by Ciachon et al, in the opening chapter of his book he writes, "The wide use of bamboo and shell sharply distinguishes the stone age of Vietnam from those of Europe and Siberia. The fact that the assemblage of primeval stone implements found in Vietnam is very distinctive, limited in variety and sparse, and that certain groups of stone implements such as arrow heads are entirely lacking is doubtless associated with this in considerable measures". He provides circumstantial evidence for this conjecture. A microscopic analysis of the Hoabminian stone tolls at Hanoi University indicates that the tools show very little wear. Borikovskii argues that this is because stone tolls were not intensively used, as the principal tools were of bamboo wood and shell, and because there were many river pebbles at hand, which could be used with comparative case. Far from less civilised than their stone age contemporaries in Europe and Africa, the Hoabminians might be regarded as actually more sophisticated in their approach, at least from such modern perspective Homo erectus everywhere was adapting to the complex of raw materials that were available to them. In Europe and North Asia, that meant, principally, stone and to a lesser extent, wood. In south Asia Paleolithic cultures were able to fill a significant number of their technological needs with a single type of plant Bambuseae.

Supporting Borikovskii's proposition, Ciacon et al argue, why would an intelligent creature such as Homo erectus bother with heavy stone tools, the fabrication of which is itself an awkward and occasionally painful business, when there existed everywhere around him in great abundance a light portable plant that was actually better suited to the purpose? Obviously for certain tusks, such as the culling and crushing or grains and the extraction of marrow from long animal bones, Homo erectus would have needed a basic stone tool kit. However for great majority of the tasks connected with the processing of vegetables or preparation of animal skins, bamboo tools would have been quite sufficient.

Recently Geoffrey Pope, an American palaeo-anthropologist who has worked extensively in northern Thailand, advanced the same theory. He has also provided an example of technological adaptation by early hominid by empirical observation. He found basalt cobbles at Paleolithic sites he had excavated in Thailand. He wondered why the early ancestors bothered to move such heavy, cumbersome stones to their campsites. The answer came after he and his colleagues used locally used limestone for their own cooking by hearth fire. The heat of the fire reduced some of the limestone to quicklime, which bewildered them and caused skin rashes and a burning sensation in the lungs. They replaced the limestone hearth with basaltic rock, and the complaints disappeared. Pope thinks that early humans must have made the ? Discovery, and that accounts for the presence of heavy stones at the Hoabinian hearth sites also.

Based on forms, size and techniques of manufacture associated finds and several other parameters prehistorians generally present the culture types into the following sequence, which might have local variations.

Even earlier to Paleolithic phase, an eolithic phase, which seem to have been fabricated by human intervention, but about which there is no consensus is envisaged.

Two culture-complexes along with distinct tool-types, viz. Abbevillian or chellian and Acheulean are associated with lower paleolithic phase. Monsterial culture is associated with mid-Paleolithic phase and Aurignacian with upper paleolithic phase. With Mesolithic and Neolithic phases varieties of cultures are associated, same is the case with bronze and copper age cultures and steel and iron age cultures.

It is generally accepted that gathering and collection preceded food production.

Around 8000 years ago primal humans moved beyond simple life of hunting with crude stone and bone implements and of gathering ready food from nature. She/he gradually learned to exert greater control over her/his sources of subsistence through the cultivation plants and breeding of animals. In place of nomadic garden culture she/he exploited the irrigation afforded by rains and floods. By this means the same portions of land were cultivated repeatedly. Cattle, sheep, goat and swine were associated with these cattle farms. This was followed by communities with a surplus of food for the support of other workers, who were drawn from the food products. They were the miners, smelters, craftsmen, transporters, officials, priests and so on. Occupational specialisation had already began.

Between 6000 to 3000 BC plough was deviaed ; the wheeled car was used on land and the sailboat on water, the inclined plane and lever were common implements. Copper ores were smelted, bronze was alleged ; bricks and pottery were fired. Canals and ditches were dug ; grains were formented orchards were planted. There were the arch and the seal. At the same time a systematic urban life had a rudimentary start. There was an accurate solar calendar ; eclipses were predicted. Also, there were adequate methods of accounting and measuring.

Four of the more important inventions during the next trinillennia were : the decimal notation (about 2000 B.C.), the industrial method of smelting iron (1400 B.C.), a truly alphabetic script (1300 B.C.) and aqueducts for supplying water to urban centres (700 B.C.).

Babylonian cuneiform tablets and Egyptian papyrus containing calculations of areas and volumes date back to 2000 B.C. The canonical Book of Changes, the Tiching written in 1200 B.C. described the Chinese hypothesis on transformations on nature resulting from interactions of the polar contraries, the Ying and Yang.

The Indian religious texts of the period contained references to nine Universal constituents of nature ; the tangible atomic substances of water, fire, air and earth ; the indinite, eternal non-atomic ether, the non-interval time space.

There were abstract thinkers in Greece also. Thales had predicted the eclipse of 585 B.C. Around 560 B.C. Anaximander had advanced a theory of biological evolution. Around 520 B.C. Pythagorus began to use geometrical analyses in his astronomic studies. The atomic construction of matter was started by Demotrius in 420 B.C. Siu (1957) gives an outline of history of thought in the West which is Summarised here.

In pre Socretic days Greece was pervaded with a materialism in natural science and a humanism in ethics. The harmonious components all mutually support and enhance each other according to master plan of constant redistribution of elemental atoms. Old things are perpetually being converted into new ones. Human life too belongs to this cycle. Human history is thus equated with the history of nature.

After a thousand years supernaturalism became the dominant theme. An over-riding religious influence impressed itself on all minds and institutions. The world no longer is the destiny of man. It is the tempting ground of the devil whose wits are pitted against those of man in a test of man's worthiness for a future reward in eternity. On earth happiness is impossible. Man's freedom is not only a source of good ; it is also a source of evil. His ultimate joy lies in union with God in the heaven to come.

Gradually the Roman and the Tectonic words generated a reaction against the dogmatism of the scholastic institutions Romanticism began to gain ascendancy and people asserted their individualism. They turned from Bible to knowledge, to wealth, to art, to sports, to escapable after escapade Explosion of inventions in technology took place in this context.

There is obvious gap in this Eurocentric cultural background of science. of right. And it does not explain early technological developments in India and China But provides a line of enquiry which can be explored.

Besides it is extremely important to take stock of the technological developments during the 19th and 20th centuries including those in the fields of communication, robotics, flight in space, nuclear weaponry and use of space in various forms and so on.

It is also necessary to examine what balance between commensibility, communion and corporate piracy was associated with each step in technology.

THE SLUMS OF CALCUTTA : THEIR DIVERSE CHARACTERISTICS NEED VARIED TREATMENT

Bela Bhattacharya

In urban sociology Calcutta is other name of 'slum city'. And the slums are as old as Calcutta - a product of historical processes of colonialism and imperialism. Calcutta as a third world metropoli of poverty and underdevelopment draws poor wage labourers who were originally rural landless labourers, share-croppers and even small tenants and others unfortunates who were victims of diferent socio-political circumstances. In fact, slums are part and parcel of Calcutta's existence where more than 2.1 million people live in 2011 recorded and 3000 unrecorded slums. The slum dwellers constitute 48.5 per cent of the total population of Calcutta.

It is quite difficult to define a traditional bustee or slum in Calcutta for various reasons. However, in her work on Calcutta slums Bhattacharya has tried to conceptually define the slum as a living reality an inevitable phenomenon accompanying urban growth in all capitalist countries having over crowding detoriated living quarters with unsanitary vitiating condition lacking basic facilities creating desparate situation endangering the health, safety and morals of its inhabitants (Bhattacharya 1989:8). But the Calcutta Metropolitan Corporation considers bustee as an area containing land not less than seven hundred square metre in area occupied by or for the purpose of any collection of huts or other structures use or intended to be used for human habitation.

From anthropological point of view it can be said that the Calcutta bustee are characterised by traditional modes of social organisation to some extent with associated value and customs which are conservative and retraded socio-cultural change despite infested with severe pathological deases. The bustee are characteristically piece together into a series of ethno-lingual desperate societies which are fraught with internal conflict. Diverse characteristics of the Calcutta slums can be readily appraised from the structural components of the slum complex. On the basis of linguistic affiliation the slums can be broadly divided into two major groups : predominently monolingual and bi-or ply lingual slum complexes. The slums of monolingual (predominantly) are further classified into 1. Bengali speaking 2. Urdu speaking and 3. Hindi speaking ethnolingual communities. Besides, there are Dravidian speaking Christian slums in south eastern Calcutta at Ekbalpur. Though they live in a particular enclaves in the slums, their way of living is comparatively well off and different than those of other people living in the slums. They are not only well off but also clean in habit and peaceloving and try to live a modest life. The Urdu speaking peoples are largely Muslims but Hindi speaking are largely non Muslims whereas Bengali speakers are both Hindus and Muslims. There are also Oriya speaking people living in the border of central and north Calcutta slums. In the social structure of Calcutta bustee three classes can be easily differentiated as follows : Firstly, landowner of the bustee who do not live in the bustee and they are limited in number in comparison to the bustee dwellers. In between the land owner of the bustee and the dwellers there is a class who are lessor or thika tenants. In a sample survey it is found that there are five per cent thika tenents (Bhattacharya 1989: 108). They collect rent from the common bustee dwellers. These common people who live in the hutments paying rent constitute the third category - the bustee dwellers. The slums are subject to certain tenancy acts and the owners did not pay any attention to improve the physical condition of the slums as a result precarious condition prevailed until 1971. In fact, the tenancy structure prevented commercial exploitation of the poverty and, therefore, investment in the slums was amount to nothing. In consequences civic amenities were nil and conditions of life sub-human.

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Following Lomnitz(1977) Calcutta slum dewllers can be equated with the hunter gatherers as if living in urban jungle. Really the livelihood of the slum dwellers of Calcutta is based on left over jobs and left over trades. They live in the interstices of the urban industrial system and feed on its waste. In spite of marginality the ragged army of the slums perform important social functions which are essential to a postcolonial commercial city Calcutta. The middle and upper classes of Calcutta are greatly indebted to cheap labour and services of the slum dwellers. The poor work as drivers, peddlers and hawkers, domestic servants, delivery boys, and a host of menial helpers of every descriptions It is explicitly clear that a symbiotic relationship exists between non-slum, well off city dwellers and poor slum dwellers. There is no doubt that major beneficiary is the middle and upper classes. More so, the slum dewllers, girls, minors and women, are employed in the domestic service which is essential for the Calcuttan upper and middle classes. A constant supply of cheap household labour relieve the upper class women of the tasks of washing,cleaning, cooking & even child care. The men are semi-skilled and unskilled labours employed in various factories usually not very large, in construction work, in dock and ship-yards; they are mostly appointed in service sector. They also work as watchmen, doormen, service station attendants, street cleaners, car washers, sanitation work and such other related jobs. All such jobs are needed to be done which generate income that recirculates throughout the economy. Therefore, the slum dewllers of both sexes are essential to keep the running condition of the economic and sociocultural system of the postcolonial thirld world underdevelop city and megapoly like Calcutta. Cultural situation of the slums of Calcutta can be equated with the 'Poverty on Culture' as most of the slum dwellers are desparately trapped in precarious poverty stricken situation which generates serious pathological conditions of "culture of poverty" as expounded by Oscar Lewis. In a good number of cases the slum dewllers are very much maladjusted with their social, economic lives and psychological adaptation are getting shaped by exclusion and deprivation - which are more apparent only during last few decades. Distress marital relations, unstable family life, early home leaving of the slum children, utter economic frustration among the adolescents and adults affect the social ties of the slum dewllers. A strong feeling of marginality of helplessness, of dependence and of inferiority is prevailing. As a result "Urban nomads" are increasing. In fact, a good number of individuals are characterised by mobility, alienation, poverty and a unique set of survival are being adopted which can be compared with the life style of the urban nomads as procounded by Spradley. It is very apparent in the social life of the city, especially, among the addicts and the gamblers that some men enter this way of life by choice, others are pushed towards it by personal problems and some others are drawn because that is where the action is. Once a man moves to the edge of this world he will be thrust to its centre. They are condemned by society's rejection and the legal system to drift, to be demeaned and degraded and finally stayed behind the bar.

Though urban underclass is not only confined to the slums, distributed over a larger area beyond the slums, discussion is limited to the slums, underclass is universally distributed in the slums and squatters of their distinctive features are hostile street and carrier criminals, skilled enterpreuners of the underground economy. Poverty, crime, poor education and dependency are the main socio-economic characteristics producing and nurturing such class. Besides, chronic lawlessness as fosterd by the unscrupulous leaders, the political parties early school droping are also characteristics of this class. Kasarda(1989:28-2) has correctly pointed out that the emergence of this class is due to the shift of economy significantly from manufacturing to service sector which did occur in the industrial zone of Calcutta.

The underclass culture seems more like highly continuous social rather than a shared system of knowledge that constitute a way of life passing generation. This is not also truly class but amorphous one represents hodgepodge of social features : like homeless, the mentally ill, physically disabled and variety of the poor, a young and elderly single parented and broken families.

The social situation of the slums are aggravating rather than improving. But the physical setting of the slums, infrastructural facilities have been changed a lot. The civic amenities and basic facilities are improving to assure an improved quality of life since 1971. Initially million of bustee dwellers were identified and a sum of Rs. 150 per capita was spent for improving the infrastructural facilities. During 1971 - 1985-86, the World Bank financed the slum imporvement project with advice and funds.

In fact, after 1985-86 the State Government could not go along with the World Bank due to certain obvious reasons. Then the slum development project has become a part of the State Government Planned Project and financial accommodation has been made in the State Plan Budget. During 1985-86 to 1991-92, the State Government made budgatory provision to spent with an amount of Rs. 1.5 crore as an average annual expenditure. During this period Rs. 35 crores were spent to upgrade the environment of the slums and per capita expenditure was raised from Rs. 350 to Rs. 500.

C.M.D.A , 1966 reports that about 1.8 lakhs population of slums of 15 wards have been covered for extending the basic facilities. Street paving which done upto March,1966 have been 3,21,135 sq.m. and acheived 75% target. In respect of retaining wall 14915 m. have been completed which are 104% in terms of acheivement level. The number of street lights connections are 2456 and the acheived is 101 per cent. The water main done during this plan period is 55306 m. and acheive 86.5% of the long Number of stand pipe done are 1005 out of target number 18331 i.e. 75.5%. The drain above 150 diameter done are 92,812 m. acheived 89%. Number of latrines made during this period are 6275 and acheived 71% of the fixed target. In addition to regular supply of Municipal water there are nine deep tubewells and one hand tubewell. All these factual data reveals considerable improvement of infrastructural facilities. But what about social, cultural and economic facilities for improving the standard of living of the slum population ?

The budgetory layout statement of Calcutta Slum Improvement Project upto 31st March, 1966, reveals that only 13.6 per cent of the total expenditure has been spent for health and 11.3% for community development. The budgetory control statement for health sector reveals that a sum of Rs. 104 lakhs i.e. 16.4 per cent of the approved costs were spent for establishment of centres; and for operating the centres a sum of Rs. 215 lakhs i.e. 34% of the health sector were spent.

The community development sector include educational, social and economic development. Total budgetory provision for educational programme during 1991-95 was Rs. 70 lakhs i.e. 14%. Social programmes include recreational, cultural, sports, study tours, T.V. community hall etc. for which total approved amount is about Rs. 64 lakhs which constitute 12.5% of the total costs of the community development sector. Economic development comprises enterpreneur development, skill upgradation, training, seed money for crops women savings club etc. For all these schemes an amount of Rs. 278 lakhs i.e. 54% has been approved.

According to C.M.D.A. source two-thirds of the slum dwellers in the Calcutta Metropolitan Area were covered upto March, 1985. The said organisation proposed that 1.23 lakhs of slum dwellers would be covered by1989-90. During 1992-95 1.8 lakhs were targeted. The C.M.D.A. gives an estimation that the following assets have been created in the C.M.D.A. covered slum area upto 1986 which is set out in Table -01.

Meanwhile a new take of was initiated in 1992 when Overseas Development Agency(O D A) of the U.K. has participated in slum development project. In June, 1995 a sum of Rs. 4619.00 lakhs was revised and approved by O D A. The main heads of Account are shown in Table-02.

During implementing improvement project upto March, 1996 a sum of Rs. 3265.08 Lakhs was spent(71 per cent of the total amount) upto June, 1995. The principal headings of the expenditure are (1) engineering, (2) Health, (3) Community development and (4) Evaluation.

Table - 01 :
Assets created in C.M.D.A. covered slum upto 1986 :

Drain	5,74,296	Mts.	Pathways Pavements	14,97,687	sq.m.
Water -mains	5,64,925	Mts.	Water points	22,714	Nos.
Sewereage	51,605	Mts.	Latrine	62,763	Nos.

Therefore, it appears from Table. 02 that Engineering(about 79%) has got the prime priority and than the health sector being 13.6% and community Development got 11.3%. The Main Item of Engineering activities are paying the road retaining the wall, street light, water main, stand pipe, drain, latrine, deep tube-well and hand-well.

Table :02
Summary of Revised approved expenditure for Calcutta Slum expenditure(March 1996) as per Overseas Development Authority.

Summary	**Revised approved Cost inLakhs**	**(%)**	**Total Expenditure Revised Cost**	**Balance**	**Percent of**
Engineering	3409.63	73.8	2561.70	2651.70	77.77
Health	628.48	13.6	278.58	349.90	44.33
Community & Development.	519.80	11-3	305.85	213.95	58.84
Training & Edu.	61.09	1.3	28.95	32.14	47.39
Total	**4619**	**100.00**	**3265.08**	**1353.92**	**70.69**

During 1991-95, a sum amount 3266 lakhs i.e. 79 per cent of the proposed expenditure was utilised. Break of the expenditures Table - 03; in year wise shows that maximum amount Rs. 38.23 lakhs, was spent upto February, 1991.

Table-03 :

Budgetary Expenditure Layout Statement of Expenditure for Calcutta Slum Improvement. Project(March, 1996) for Engineering, Health, Community development and Training & Evaluation Expenditure.

Summary Cost	Revised approved	Actual Expenditure				Total	Percent
		1991	1992	1993	1994		
Engineering	3409.63	....	797.48	264.70	826.92	2651.78	77.8
Health	628.48	11.52	34.82	89 96	58.79	278.58	44.3
Community Development	519.80	13.21	42.54	62.94	114.23	305.85	58.8
Training &	61.09	5-50	5.86	5.27	5.74	28.95	47.3
Total :				422.27	1005.68	3265.08	70.5

During March, 1991 to 1992 total expenditure incurred was about Rs.880 Lakhs i.e. 19 per cent of the total expenditure fixed for 1991-96. The next year 1972-73, the expendture came down to 9 per cent, Rs 423 lakhs. The period between 1993 & 1994 the maximum share of the total expenditure,Rs. 1006 lakhs i.e. about 22 per cent, was spent. In 1995 the corresponding figure was 925.7 lakhs i.e. 20 per cent of the total expenditiure.

Table - 04 : Budgetary Layout Statement Upto 1995

Engineer	**Total**	**1991**	**1992**	**1993**	**1994**	**1995**	**Total**	**Percent**
Phase(I)(b)	1385.33	....	795.51	263.45	174.95	67.00	1301.71	93.96
Phase(I)(b)	2022.30	....	....	1.25	651.97	654.00	1308.02	64.48
Miscellaneous	2.00	......	1.97	264.70	NIL	40.00	1.97	98.90
Total	3409.63	....	797.48	264.70	826.92	762.60	2651.70	77.77
Per cent	100.00	....	23.4%	7.8%	24.3%	22.4%	....	77.77

It appears from the Table-04 that nothing in 1991 spent. During 1992, 23.4% out of the allotted fund for engineering were spent. The corresponding figure for 1993 is 7.8% where as the per cent of the expenditure was increased to 24.3% in 1994 and 22.4% in 1995. In fact, total expenditure during 1992-93 is Rs. 2652.00 Lakhs i.e. 78% of the budgetary outlay for engineering activities. As a result, civic amenities have been increased to some extent.

As mentioned above emphasis was given more in Engineering activities Table - 04 under slum improvement project and these activities were confined to 13 wards, namely 15, 49, 69, 70, 117, 118, 133, 134, 141 under sub-phase 1(a). Under sub-phase 1(b) six wards are 103, 104, 106, 107, 108 and 109. There is a special provision for drainage development in 109 ward with an approval project of Rs. 200 Lakhs but only 70 Lakhs. 35 per cent, was spent in 1995. Moreover, 94 per cent of the total budgetary layout of phase 1(a) were spent upto 1995. In case of phase 1(b) the expenditure incurred during the said period was Rs. 1308 Lakhs out of Rs. 2822 Lakhs i.e. 68.6%.

It appears from the Budgetary Control Statement for community development programme that only Rs, 3,061 Lakhs out of Rs. 520 Lakhs i.e. 59% of the assigned grant were spent. Itemwise detail break-ups show that out of Rs. 70.17 Lakhs only Rs. 47.15 lakhs i.e. 67% were spent. In case of social programme out of Rs. 63.95 actual amount spent was Rs. 25.88 lakhs i.e. 48.5% and the corresponding figures for economic development only 48.5%, out of Rs. 277.55 lakhs only Rs. 155.57 were spent. But, approved cost for running the community development project in the form of salary and travelling allowance are 71% of the assigned cost.

It deserves to be mentioned, in this situation, that the community development sector is very vital in improving the standard of life of the slum dwellers. To tackle the varigated human problems of the slum it is imperative to increase the funds allotted to the community development sector. Besides, different social groups and their respective vulnarble problems must be tackled with different stratagies. The most vulranable sections are the utban underclass and urban nomads. For them appropriate measures should be taken by a combined team of social scientists and the administration with missionary zeal. Poverty is the main root of most of the problems which needs to be eradicated adopting suitable means including generating self employment situation with proper training and supplying resources. In this respect imparting of basic knowledge of organisational and management problems might be helpful in achieving self employment programme. New Financial Institute like slum cooperative might serve the people. As the slums are very heterogenous, numerous social groups do have different socio-cultural background, they can be inspired to be employed in their indigenous production activities which have demand in the market. For this, financial resources, marketing facilities and knowledgable advisers are essential to guide the artisan class.

It is also imperative to implement compulsory schooling for the children, vocational training for the young adolescent and night school for the adults of both sexes, which are the needs of the hours.

Last but not least, the kinship bonds and other social ties which are still functioning in attenuated form must be preserved and due attention should be paid through various communication systems on the nobility and virtue of stable family and kinship ties which safeguard the persons against the problem of alienation.

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FURTHER STUDY ON STILL BIRTH AMONG THE BENGALEE MOTHERS OF A CALCUTTA HOSPITAL.

Jayita (Ghoshal) Roy, S. C. Pal, A. R. Banerjee

Any event of conception is terminated either by (a) birth of living child or (b) reproductive wastage. In the last event Pearl (1939) included still birth, miscarriage and abortion. He categorically differentiated still birth as "an infant born dead at or near term," from those of the miscarriage and abortion by the statement that "the term 'miscarriage' or 'abortion' is applied to the passage from the mother of the foetus insufficiently developed to have an chance of extrauterine life"..

Who (1950) however utilised the term "foetal death" to include both still birth and abortion, and observed that "foetal death' is death prior to the complete expulsion or extraction from the mother of a product of conception, irrespective of the duration of pregnancy, the death is indicated by the fact that after such separation the foetus does not breath or show any evidence of life such as beating of heart, pulsation of umbilical cord or definite movement of voluntary muscles".

Cunningham et al (1997)), however, took the still birth as 'a state of new born at birth weighing 1000 gm or more (28 completed weeks) which being completely born does not show signs of life. The period can be extended to early 20 weeks when foetus weighs 500 gm".

Since the publication of Russell (1936) and Ciocco (1938) studies on the problem of still birth centering around natural selection relating to its magnitude, and population wise manifestations have been subject matter of study of number of authors (Pearl 1939, Yearushalmy 1939, Strandskov 1947-49; Fraccaro 1958, Penrose 1951, Banerjee et al 1976).

In recent years a number of studies (Keeling 1993, Berendes 1993, Tafari 1983, Tafari and Zerihum 1993, Hoyert 1995, Hanson et al 1993, Garner 1995a, b, on still birth categorising it as an index for social health have also been taken up.

Berendes (1993) took maternal health conditions and similar others factors playing major roles for adverse birth outcomes and as such noted marked disparities in rates of perinatal mortality between developing and developed countries.

In view of the above mentioned ideas the present study was undertaken in continuation of the earlier ones (Banerjee et al 1976) in this hospital, to find out changing nature of still births and thereby to have an assessment of the nature of improvement of health care system specially relating to maternal health through antenatal care.

MATERIAL AND METHOD :

Data for the present study were collected from the labour register of the hospital for ten years (1985-1995) which contained information on 35620 single births and 587 still births. Along with those records, metric data on birth weight and body length and information on sex of the infant, order of birth, gestation period and mother's age were also available. Although there was large number of entries for the multiple births, which were not included in the present study to confine it on single birth only. The large body of the present sample (nearly 88%) was constituted by the Bengali speaking population, the rest of the data refers to those who migrated from other states of India.

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Economic position of the mother for the present study was determined strictly following Banerjee (1969, 76) on the basis of her admission in the ward, namely free, paying and ward.

RESULTS AND DISCUSSION :

Data collected following the procedure mentioned above as presented in Table 1, show the preponderance of males over females both in live and still births.

Incidence of still birth and live birth when analysed according to the economic position of the mother (Table 2) a higher frequency of it is found among the mother of paying ward or middle income group than those of the free ward or low income group and the cabin or the high income groups. Banerjee et al (1976) recorded higher incidences of still births among mothers of the free ward than the paying ward. The higher incidence of still birth among the mother of the paying ward than the mother of the free ward might be due to greater number of admissions into the paying ward. Possibility for involvement of biological factors, can not be also ruled out, further work in this line is necessary to know the fact more clearly.

Strandskov and Osina (1947) found the incidence of still birth to be remaining almost stationary over the years between 1922 and 1936 in U.S. A. In the present hospital Banerjee et al (1976) found the indicence to be fluctuating between 2.61% to 3.27%, during the period between 1956-64. In agreement to the above mentioned finding, the present study conducted after nearly two decades (1985-95) compared to that of Banerjee (1976) showed also the fluctuation for incidence of still birth between 0.79% - 2.64%. The rates are however no doubt lower than those of the earlier ones. The two sets of the data collected from the same hospital with a time interval of over two decades (Table 3a, 3b) show the significantly lower ($t = 10.00$) rate (1.68%) of incidence of still birth compared to 2.82% of the earlier work. The decreasing tendency of the incidence of still birth ($t = 10$, $p<0.001$) over the decades, might be due to better antenatal care during pregnancy, as pointed by Berendes (1993)

Incidence of still birth over the years as presented in Table 3, showed comparatively higher incidences of males compared to that of the female. Finding is thus in agreement with those of Banerjee (1976), Keeling (1993), Hanson (1993).

Sex ratio of the live borns and the still borns as presented (Table 4) over the given years, show much difference between the live and still borns. Higher sex ratio of the still borns as well as of the live borns and the differences between them was also noted by Banerjee et al (1976). Higher sex ratio (Table 5) in primi para than that of multipara in stillbirth as noted in the present study, stands in confirmity with Banerjee et. al (1976).

Overall sex ratio of the still borns as found in the present study (115.81) is found to be lower than that as found earlier (118.95) by Banerjee et al. (1976) and sex ratio of still borns as found in both the studies was found to be higher than those reported from other countries (Table 6)

Irregular pattern in sex ratio at birth of the live born as pointed out by Dasgupta et al (1956) and Pakrasi and Halder (1970) stands in confirmity with the studies on still borns conducted during the periods i.e. 1956-64 (Banerjee et al 1976) and the period 1985-95 (present study). The phenomenon of high masculinity among the live borns at the first parity is also marked among the still borns as pointed out by Dasgupta et al (1956) and Banerjee et al (1976).

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Table : I

SINGLE BIRTHS (LIVE AND STILL) DURING THE YEARS 1985 – 1995

TYPE	MALE		FEMALE		TOTAL	
	NO.	%	NO.	%	NO.	%
Live births	18180	50.21	17440	48.17	35620	98.38
Still births	315	0.87	272	0.75	587	1.62
TOTAL :	18495	51.08	17712	48.92	36207	100.00

Table : 2

STILL BIRTHS ACCORDING TO SEX AND SOCIO-ECONOMIC STATUS OF THE MOTHER

Socio-economic Status	Male		Total	Female		Total	Total	
	Live births	Still births		Live births	Still births		Live births	Still births
Free Ward	5572	52	5624	4857	31	4888	10429	83 (0.79%)
Paying Ward	10463	254	10717	10118	210	10328	20581	464 (2.27%)
Cabin Ward	2145	9	2154	2465	31	2496	4610	40 (0.87%)
Total	18180	315	18495	17440	272	17712	35620	587

Table : 3 (a)

INCIDENCES OF STILL BIRTHS AND LIVE BIRTHS ACCORDING TO SEX DURING THE PERIOD 1985-1995

	Male			Female			Total		
Years	Live Births	Still Births	%	Live Births	Still Births	%	Live Births	Still Births	%
1985	2545	20	0.78	2375	19	0.8	4920	39	0.19
1986	2140	29	1.35	2195	32	1.46	4335	61	1.44
1987	2180	25	1.15	2055	20	0.97	4235	45	1.84
1988	1960	43	2.19	1960	29	1.48	3920	72	1.84
1989	2140	55	2.57	1800	49	2.72	3940	104	2.64
1990	1875	42	2.24	1900	37	1.95	3775	79	2.09
1991	605	8	1.32	560	6	1.07	1165	14	1.20
1992	650	19	2.92	620	9	1.45	1270	28	2.20
1993	1360	25	1.84	1345	20	1.49	2705	45	1.66
1994	1460	29	1.99	1220	32	2.62	2680	61	2.28
1995	1265	20	1.58	1410	19	1.35	2675	39	1.46
Total	18180	315	1.73	17440	272	1.56	35620	587	1.68

Table : 3 (b)

INCIDENCES OF STILL BIRTHS OF THE PERIODS 1956-64 AND 1985-95

	Male				Female				Total			
Years	Live Births	Still Births	%	t	Live Births	Still Births	%	t	Live Births	Still Births	%	t
1956–64	17758	528	2.97	7.35	16760	445	2.66	6.87	34518	973	2.82	10.00
1985–95	18180	315	1.73		17440	272	1,56		35620	587	1.68	

Table : 4

SEX RATIO OF THE LIVE BIRTHS AND STILL BIRTHS DURING THE PERIOD 1985-1995

Years	Live Birth	Still Birth
1985	107.16	105.26
1986	97.49	90.62
1987	106.08	125.00
1988	100 00	148.27
1989	118.89	112.24
1990	98.68	113.51
1991	108.03	133.33
1992	104.84	211.11
1993	101.11	125.00
1994	119.67	90.62
1995	89.72	105.26
Total (1985–95)	104.24	115.81

Table : 5

SINGLE STILL BIRTHS ACCORDING TO BIRTH ORDER AND SEX

	MALE			FEMALE			TOTAL		
PARITY	No.	%	t	No.	%	t	No.	%	t
Primipara	213	36.27	7.6	173	29.47	6.13	386	65.76	2.4
Multipara	102	17.38		99	16.86		201	34.24	
TOTAL	315	53.66		272	46.34		587	100 00	

$t = 7.6$ $p < 0.001$ $t = 6.13$ $p < 0.001$ $t = 2.5$ $p < 0.05$

Table : 6

COMPARATIVE TABLE OF SEX RATIO OF THE STILL BIRTHS.

SEX RATIO	COUNTRY		AUTHOR	
107.64	England and Wales	(1934 – 47)	Mckeown & Lowe	(1951)
108.00	Scotland	(1939 – 46)	— do —	
114.20	Birmingham	(1936 – 49)	— do —	
114.80	Selected area of U.S.A.	(1925 – 34)	Ciocco	(1938)
114.60	Paris	(1891 – 1902)	Mckeown & Lowe	(1951)
112.60	U.S.A. (Carnegie Collection)		— do —	
118.95	West Bengal Calcutta, India	(1956 – 64)	Banerjee et. al.	(1976)
115.81	— do —	(1985 – 95)	Present Study	(1998)

TRADITIONAL WISDOM & KNOWLEDGE : RELEVANCE IN THE PRESENT DAY WORLD

Buddhadeb Chaudhuri

Health Situation :

Despite all our technological break through, we still live in a world where a fifth of the developing world's population goes hungry every night, a quarter lacks access to even a basic necessity like safe drinking water and a third lives in a state of abject poverty—at such a margin of human existence that words simply fail to describe it. More than a billion people in developing countries still lack safe drinking water. In developing countries, the major causes of death are infectious and parasitic diseases, which kill 17 million people annually, including 6.5 million from acute respiratory infection, 4.5 million from diarrhoea diseases and 3.5 million from tuberculosis. Most of these deaths are linked with poor nutrition and an unsafe environment—particularly polluted water, which contributes to the nearly one billion cases of diarrhoea a year. In both developing and industrial countries, the threats to health security are usually greater for the poorest, people in the rural areas particularly the indigenous people. The disparities between rich and poor are similar for access to health services; in the developed countries there is 1 doctor for 400 persons whereas in the developing countries, it is 1:7000. Spending on health programmes is also very different and it is quite low in the developing countries; for example it is only $7 per individual per year in Bangladesh. The situation is not much better in many other developing countries. Considering this alarming situation, out of the seven important targets put forward for human development in the Agenda for Social Summit, four were related to health. They are as follows :

1. Primary health care for all-with special stress on the immunization of children.
2. Severe malnutrition to be eliminated–and moderate malnutrition rates to be halved.
3. Family Planning services for all willing couples.
4. Safe drinking and sanitation for all

(UNDP **Human Development Report,** 1994)

Need for an Alternative :

The prevailing health and medical system, the western system, has unfortunately failed to meet the need of the world's majority. The failure of the Alma Ata Declaration in fulfilling its objectives of achieving Health for all by the year 2000 gives more urgency for looking for an alternative. In most countries a very frighteming policy change is being maneuvered by agencies like the World Bank and IMF (International Monetary Fund) to give less and less emphasis to the social and welfare Sectors and higher emphasis to the economic and infrastructure sectors. As such the financial allocation for health is going down in most Asian countries. The implications of such a trend in countries where health insurance is unaffordable to the majority is unimaginable. Based on current trends in health care financing and the failure of the Alma Ata Declaration to take a grip of the situation there is an imperative need for evolving an Alternative. In this whole changing situation, the condition of the poor, particularly the indigenous people has become more critical and difficult.

Generally, when we talk or think about science, we refer to the western or industrial society. In the context of scientific development, we prefer to discuss more about the so called modern scientific innovations assuming that science is only there in those societies and quite often implying that scientific rigour or interest is absent in other societies. The role of science is to help mankind to meet

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the various demands exploiting the natural resources in the best possible way without adversely affecting the environment. Thus, in the given socio-economic and historical context, the knowledge of making fire made revolution in human society. People have developed their own science and technology based on the demands of the concerned societies but quite often these are ignored. What I want to impress here is that we need to look at indigenous science and technology particularly when an existing body of knowledge is available; perhaps it is better to develop it instead of replacing it in the name of scientific development and modernization.

Traditional System :

Every culture. irrespective of its simplicity and complexity, has its own beliefs and practices concerning diseases and evolves its own system of medicine in order to treat diseases in its own way, even though from the point of view of the western system, they may appear to be irrational.

In the past, this knowledge base was oral and almost always transmitted verbally from one generation to another. Such knowledge is in fact still used to-day in may areas all over the world in the day to day living of many indigenous people. In several parts of Asia, apart from the folk traditions there is also a parallel classical tradition of knowledge. These classical knowledge systems have very sophisticated theoretical foundations and are codified and documented in thousand of manuscripts. They represent non-western knowledge systems of the world and very different in their world view, concepts and principles from the western knowledge systems. Traditional knowledge in medicine and health has been time tested over generations. It is a holistic concept covering a broad base from diseases prevention, health promotion and healing. It has and can deal with health problems ranging from the common cold, air and water borne diseases to orthopaedics and other complicated cases. This system is also based on a wide range of biological resources using thousands of plant species, hundred of animal species and animal parts and various minerals and metal sources. Unfortunately, over the years traditional knowledge and skills have been neglected and a prejudice has developed towards these non-western sciences. This prejudice has been engineered and encouraged by powerful nations, multinationals in order to subjugate non-western cultures.

Crucial issues and myths :

A number of myths have been systemically created against the non-western system in general and indigenous system in particular and it is essential to demolish them to evolve a proper health policy in the developing countries particularly for the indigenous people and the poor.

1. Often it is said that health is the exclusive domain of medical science. By restricting it in this way, the socio-economic, cultural and environmental issues are often ignored.

2. Following the above logic, more and more expenditure on sophisticated research is promoted. It is not my intention to discourage research, but when the resources are limited, it is to be seen how best possible way the resources can be utilised and whether it should provide more expensive sophisticated facilities to a few or minimum less expensive facilities to a larger population. Perhaps there is a need to make a balance between the two.

3. Quite often it is said that the rural people, particularly the tribals are all superstitious. Thus if a tribal worships a deity for cure, automatically it is assumed that they are superstitious and would not accept the so-called modern health practices, but when that the same things is done in the cities of India it becomes tradition and when it is done in the churches of Europe, it is leveled as convention. The question of rationality cannot be judged or examined in isolation, without examining the eco-system, health facilities available and economic condition. Again, the mere presence of a health centre does not necessarily mean that people would depend on it, if proper and adequate facilities are not available or if the people are not convinced about its efficacy. Infact, bulk of the social scientists, who have studied health culture or the rural population in India have been over-enthusiastic in

a [illegible] aspects in a traditional system [illegible]; the need is to provide all the alternatives and not [illegible]

5 Th[illegible] in favour of the introduction of the modern system (and of the replacement [illegible]tional) is that tribal and similar traditional approaches do not have an answer tp many diseases. This is an undeniable fact but does not necessarily reflect a limitation of the traditional system. Apart from the fact of the non-availability of many herbs, one should add that many of these diseases were formerly unknown. Naturally, the question of any traditional system having a remedy for them does not arises. Infact, for the same reason, modern medicine also does not have remedies for many diseases.

Strategy :

1. Documentation of traditional knowledge in health and medicine is urgently necessary. Most of the research and publications available in this field is purely academic in nature. Society in general is schooled into thinking that adopting traditional health skills and culture is inferior as compared to modern medicine. This attitude has contributed to the further degeneration of this knowledge. Documentation is also urgently needed because the traditional knowledge is mostly an oral tradition and hence documentation is necessary before they are forgotten. Loss of these rich and diverse ecosystem bases knowledge systems and skills will be no ordinary loss.

2. Legal and policy issues involving protection of traditional knowledge also needs to be examined. A legislative framework is required whereby the knowledge is kept with the people and recognition, financial or otherwise, is accorded to the individual or community by commercial firms who have to use their knowledge. The limitation and scope of Patent Acts, particularly in the context of globalization process, is to be carefully examined in this context.

3. The changing forest policies and the changing development scenario in Asian countries have adversely affected the strength of the biological resources used in traditional medicine as much of these resources are being depleted through deforestation. The mono-plant afforestation programmes where emphasis is given on commercial plants has not helped the people much. There is a need to promote conservation measures for saving medicinal plants on various eco-systems and habitat..

4. A number of studies have pointed out the nature of health hazards in the context of unplanned/uncontrolled use of insecticides and pesticides. It has been noted how they have killed the small fishes in the paddy field and thus the poorer families, who generally consumed this protein were deprived of it. This is also true in case of many tribal areas. Thus the whole development strategy needs critical analysis as it may adversely affect the environment and consequently the health status of the people, particularly the tribals.

5. Multinational drug companies, medical lobby and the western media have played a major role in disrupting and negating the indigenous knowledge systems while on the other hand exploited this traditional knowledge and resource base to develop new drugs. Current efforts at research in ethnic pharmacology have often proved to be counter-productive to the development or advancement of local cultures as the objective is not to strengthen the traditional knowledge and resource base but to get information for multinational drug companies. It is well known that drug multinationals have been robbing traditional knowledge for their own interests.

6. There is a need to perpetuate and revive the traditional/indigenous system which is close to the people, non-commercial in nature and curative in approach. In this context, it may be neces-

more [redacted]

Traditional Knowledge and Wisdom : [redacted]

A study was conducted on a number of villages in [redacted]. It has been noted that people have traditional knowledge and wis[redacted]sides the studied villages, an attempt was made to ascertain the traditional knowledge [redacted] among the tribal communities in this region, covering the tribal dominated areas of West Bengal, Bihar and Orissa. It may be added here that by virtue of close association with some activist groups who are working among the tribal groups in the area specifically on their health and treatment, a large number of traditional herbal medicines used by them were also identified.

Disease and treatment particularly in the tribal societies, cannot be properly understood in isolation. Health and treatment are very much connected with the environment particularly the forest ecology. The traditional health care system and treatment are based on their deep observation and understanding of nature derived through their observation of other animals in nature. Though we have limited ethnobotanical studies with reference to the tribals, but all of them have indicated deep knowledge of the tribal people regarding the medical value of different plants which they regularly use for cure and treatment. It may be added here that many of the tribal groups use different parts of plants hot only for treatment, but even for population control. This knowledge can be fruitfully utilized in a wider context. Again, many tribal groups plant certain types of shrubs against insects. Instead of going for insecticides, these shrubs can be planted since they would not adversely affect the environment and may be more helpful to preserve the ecological balance.

Even though we have only a few ethnobotanical studies with particular reference to the tribals, ethnozoology, which seeks to know the medicinal application of animals and aims to study the interrelationship between man and animal in this context, is still less developed. In fact, there are hardly a few studies in this field worth mentioning and, incidentally, the first ethnozoological study conducted by the Zoological Survey of India (Joseph, 1989) was in M. P. as it has the largest tribal population in India covering about 23 percent of the total population of the state. Out of 58 scheduled tribes, the study covered 39 communities and the utility of the animals in food, medicine, family-planning, age stabilization, mechanical and industrial uses, fuel, fertilizer, religious purpose, witchcraft, harmful animals and for other uses (total 28 uses) was studied. The study indicated about 894 medicinal applications of various animals of which the maximum number of application was that of mammals (433), followed by birds (136), reptiles (107), moullses (64), insects (44), crabs (39), fishes (35) and other animals. A review of literature clearly indicates our meager knowledge of traditional animal-medicine, even though medicinal application of animals may be common among most of the tribal communities.

A knowledge and documentation of traditional tribal medicine are also urgently necessary. It is important for the modern system to begin with the base existing in the tribal society and build on it, rather than replace it. In order to achieve this, information about tribal medicinal practices should be documented before they are forgotten. A study of indigenous method of treatment may help to identify new methods of treatment of various diseases with certain modifications. In fact, a number of ethnobotanical studies have helped to identify a number of medicinal plants used by the tribals to treat different types of diseases. Many of them way be very useful to treat diseases and it is urgently necessary to document them and try them after proper scientific experiment. This has been observed in the few studies that have been made on tribal medicine, especially in terms of efficacy, which is very encouraging. This, however, needs to be further substantiated by sustained research. It may be said that the achievement of tribal medicine is quite revealing. However, to utilize the research findings for further development and application for benefitting the vast majority of the rural poor, particularly the tribals who are living in areas which have very little or no so called modern medical facilities, needs an integrated and multi-disciplinary research and follow-up dissemination efforts.

Documentation should be made and at the same time one has to be aware of the risks involved and the use the commercial interest can put to it. Hence, it should be done with certain reservations. Cases are not lacking, when after the publication of research reports on traditional medicinal plants used by the tribals, many such plants were collected in bulk by outside big industries for commercial use for profit. As a result, they are no more available to the traditional medicinemen to whom they are so essential for treatment. As a result, the tribals are deprived of their traditional system without the modern system becoming accessible to them.

The relation of forests with nutrition may be mentioned. It has been noted by many that the tribals living in remote areas have a better health status and more balanced food than those living in less remote areas. The various roots and tubers available in the forest or small animals they can hunt supply a balanced nutrition to them. There is no doubt that deforestation is likely to affect the nutritional status of the tribals as most of the roots and tubers are not be available. Again, in many cases, it has been noted that certain diseases may be common in certain areas but they are controlled because of certain food habits based on vegetation available locally, or certain practices which have been generated through tradition. There is no doubt that any disturbance in the eco-system is likely to affect the balance and some diseases may spread very quickly. The mode of utilization of available natural resources often determines the long term impact on health. A number of scholars have pointed out the nature of health hazards in the context of unplanned/uncontrolled use of insecticides and pesticides for agricultural development. It has also been observed how this may affect the nutritional status of people, particularly the tribals. The use of insecticides and pesticides has killed the small fishes in the paddy field and thus the poorer families, who generally consumed this protein were deprived of it. This is also true in case of many tribal areas. Thus the whole development strategy needs critical analysis as it may adversely affect the environment and consequently the health status of the people particularly the tribals.

Forest happens to be the main source of getting medicinal plants and animals. Naturally the different Forest Acts restricting the use and exploitation of forest resources are adversely affecting the health and treatment in tribal societies. Thus, though apparently there does not exist any relation between the forest and health of an individual, in reality, the Forest Acts, deforestation and certain types of afforestation programmes may adversely affect the health of the tribals. In some of our studies on the health care system in the tribal areas, we observed how the tribal medicinemen were facing difficulties in getting medicinal plants. Most of the traditional medicinemen who came from the three states of Bihar, Orissa and West Bengal, while discussing the problems they faced in practising their profession, all clearly pointed out the difficulties they were facing in gathering medicinal plants mainly from the forest. The success of their approach has to be analysed in this context, even if their treatment is not successful in one context.

The relation of treatment and nutrition with forest among the rural population, particularly among the tribal communities is quite obvious. The traditional herbal treatment is rather a people's knowledge and an oral tradition. In many cases, many persons in the concerned community have the knowledge and in some cases, a few selected persons, the traditional medicine–men are more knowledgeable. But in any case, people depend on nature, particularly on forest for these medicinal plants. Thus deforestation and commercial afforestation of mono-plant forest (?) may seriously affect the availability of these medicinal plants Even the nutrition may be similarly affected. Thus access to forest resources can affect treatment and nutrition. Thus some of the major problems the tribal communities are facing in general and the traditional medicine-men in particular in this context are as follows :

1. Deforestation and non-availability of medicinal plants and animals.
2. Commercial afforestation and more emphasis on commercially important plants-consequently non availability of herbs.
3. Forest Laws and Acts restricting the use and exploitation of forest resources.
4. Non-availability of medicinal plants because of commercial interest in many areas.

There is a need to rediscover the nature of treatment prevalent in the rural areas particularly among the tribal communities which could sustain them for many centuries. The advocacy of traditional method of treatment does not mean that something counter to development is suggested. The point is that there may be many positive aspects in a traditional system which should be encouraged and propagated. In fact, the need is to provide all the alternatives and not be depend on only one system.

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STUDY OF ETHNIC RELATIONS IN INDIAN METROPOLIS

Sumita Chaudhri

The term 'ethnic' may originally have been based on an idea of racial identity, but it is certainly wider than that now. One has to take cognizance of the development of the definition of 'race' in Physical Anthropology, using blood tests as reliable data for determining a biological identity, we could strictly speaking, only conceive of a human race and not of separate races of human beings as was the fashion in the 19th century. Now the term ethnic does refer to particular characteristics of a society bound together by the concept of a race or community or group with an identity of its own. Since ethnicity is the basis on which the group formation and the simulation of the traditional culture takes place. It is necessary to look at the factors contributing to ethnicity.

Ethnicity is a sense of ethnic identity which has subjective, symbolic use by a group of people in order to differentiate themselves from other groups. Harding et. al (1969) define an ethnic group as a collection of people considered both by themselves and by other people to have in common one or more characteristics as religion, racial origin, national origin, language and cultural tradition. Thus, ethnic group is any social category of people who have a common culture that sets them apart from others in society (Dressler and Willis, 1976). As a matter of fact it is a human group bound together by ties of cultural homogeneity (Berry and Trischner, 1978).

Research on ethnicity and ethnic groups is itself a product of the 20th century. As Glazer and Moynihan have recently pointed out, the term ethnicity was not widely used until the 1960's, as evidenced by its appearance for the first time in Webster's Third New International Dictionary in 1961 and other major dictionaries in subsequent years. This does not mean that they have taken on new significance in the post-colonial period as the developing nations of the world attempt to define their own identity and the people within them claim certain rights on the basis of their belonging to a separate group (Lewandski, 1980).

India, even today, is essentially rural but the pace of urbanization is quite fast which is evident from the following table :

TREND OF URBANIZATION IN INDIA

Census year	Urban population (000)	% of urban population to total population	growth rate of urban population
1951	62,444	17.29	41.42
1961	78,937	17.97	26.51
1971	109,114	19.91	38.23
1981	159,463	23.34	46.14
1991	217,178	25.72	36.19

Source : Census of India 1991

According to Indian census, an urban area with a population of 100,000 or over is called a city and a population of 1 million or over is called Metropolis. A population of over 5 million which includes urban agglomeration termed as Mega city. In India, there are four megapolitan cities,

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namely Calcutta, Chennai, Delhi and Mumbai. Thus, concentration of population is one of the major criteria of urbanization. Urbanization is not only an indicator of economic development but also as an important factor of social change. Besides social characteristics of urban population, a major aspect of the process of urbanization has been migration. From the above Table it may be reflected that the huge increase of population in urban areas is not due to internal growth, but obviously due to migration. Migration plays a very crucial role in the process of urbanization. The role of migration in the context of social change and economic development has been noted by a number of scholars who have observed that large scale migration, whether between nations or among different social and ecological zones of a nation have played an important role in social change (Doughty 1972). Jackson has noted that the movement of population has been and remains an essential component of economic development, social change and political organization (1969). Even though we have a number of studies on migration in the urban context, there are only a few studies critically examining the social issue related to migration. It is important to study, besides the socioeconomic background of the migrants, the nature of adjustment in the urban milieu. It is expected that the migrants would bring with them their own socio-cultural tradition, world view and behaviour pattern and naturally the socio-cultural implications of migration in the process of urbanization can be an interesting aspect of enquiry.

Among the more important social phenomena that process of industrialization of a society is the one involving the movement of large numbers of rural people to urban centres. While some of them who move to the urban centres may originate in other urban centres, the large bulk of the flows made up of people who move from the villages to towns or cities. This movement of predominately rural folk to urban, metropolitan centres is an event of economic, socio-psychological and cultural significance. The migration from rural areas to urban centres does not involve merely a movement in physical space. As they leave their small family and community centered villages with its agricultural base to go to the town or city with its large, relatively impersonal aggregate of people who are primarily engaged in administrative, commercial and industrial activity, the migrants are moving from one form of organization of social life to another. If a migrant lives in the metropolis, and especially if he has some cash he can send home he raises himself and his family in the esteem of his village. It is true that to the extent that he judges himself by the standards of his people the migrant has not really migrated, moved out of the village, and formed his own urban frame of reference. But that only adds to the socio-psychological complexity of the process of migration.

Though rural-urban migration facilitate by push and pull factors, large number of people from rural areas are uprooted and transplanted in the alien environment of urban areas, especially big cities. During the British rule in India, the process of internal migration, particularly inner-regional migration, intensified considerably. The modern phase of urbanization in India is witnessing an enormous movement of people from rural areas to urban centres and also from one region to another. Over one third of all people living in big Indian cities were born outside and their proportion tends to increase in direct relation to the size of the cities. Thus, most Indians in cities are in transition—living in cities but still maintaining their village contacts and rural wave of life. This feature is often perpetuated by the existence of rural enclaves of population established by earlier streams of migrants in cities. The non-commitment of labour to urban ways of, living has also been attributed to the migratory character of city population to some extent, though other explanations have also been put forward from time to time.

In 20th century, urban agglomerations and cities in India have grown faster than the smaller towns and rural areas. Industrialization of cities on large scale due to availability of necessary infrastructure attracted manpower from both small urban areas and rural areas. While jobs were created in cities due to expansion of industries, a part of the demand for additional labour in such expanded or newly established industries particularly in big cities was met from within urban areas. However, supply of additional labour force from within urban areas was inadequate. Therefore, a large portion of working population from rural areas and from small towns migrated to cities in search of jobs. In this country the process of migration is further complicated by the fact that for many of the immigrants, their shift to the city involves not only the transcending of long physical distance but also of additional cultural barriers associated with different language and religion. In India urban population has grown steadily and it has furthered its momentum in the recent decades. It is evident from available data that the urban population has increased more than six-fold while the total population registered an increase of less than three fold. The urban and total population in 1901 were 26 and 238 million respectively and have grown to 160 and 605 million in 1981. While the total population increased between the period 1901 and 1981 by about 187%, the urban population has increased by around 518% and the corresponding rural increment was less than 150%. The total number of towns has increased from 1917 in 1901 to 3245 in 1981 whereas the million plus cities increased from 9 in 1971 to 12 in 1981. The rapid increase of urban growth in recent decades indicates further scope for growth of urban population unless migration being recognized both as vehicle for and the consequence of modernization. Urbanization has to be seen as a part of development. The growing percentage of the population living in urban areas is just one of the several structural changes and developments as are related to modernization process. Historically cities and towns have usually been the centres where development and civilization have flourished and eventually it is likely that many nations will develop into urban societies.

India, one of the largest multi-ethnic societies in the world is a new nation where the vast majority of people live their entire life in the vicinity of their place of birth. Yet, particularly since independence from British rule in 1947, there has been an increase in the number of people moving within the subcontinent, and as a result increased interaction between people from different cultural, linguistic, religious and caste background in major cities. Even in the pre-colonial and pre-industrial period, urban centres emerged and the phenomenon and migration from various linguistic and cultural regions in India to the urban centres, forming into subcultural groups can be traced (Nair : 1978 : 3). In the Indian context, Dube (1955), Kapadia (1956), Bose (1964), Gore (1960), Nair (1978) and Lewandski (1980) have noted the persistence of the traditional social institutions like the caste, joint families etc. It has also been observed that many regional linguistic groups have maintained the traditional norms and customs in the urban context.

Bose's observation is that in the Indian cities many regional and linguistic groups exist maintaining the culture of their place of origin (1968).

In fact. Urban societies in India are multiethnic. In most of the metropolitan cities and other urban centres, ethnic communities tend to recreate a replica of their regions, cultural and social environment. Bose (1968), in his book, Calcutta : A Social Survey summarizes the above situation thus : There is a situation of cultural pluralism in the city of Calcutta with different respective cultural islands It has been observed that forces of linguistic loyalty and culture maintenance have played an important part in sustaining an essential pluralistic societies made of co-optation between immigrant groups and the wider society (Richmond : 1969). In fact, anthropologists who have studied the complex societies, have distinguished between great and little tradition (Redfield : 1956). This in order to study the urban social situation and integration, it may be necessary to examine the urban community as a whole and smaller communities living within it. Naturally in the context of immigrant communities and to understand the process of urbanization in India, the following questions may be examined—

1. Whether they become a part of it or maintain distinct socio-cultural identities ;
2. The position of migrant communities, how they adjust to the urban socio-cultural system ;
3. The nature of formation of different social groups along with traditional social cleavages are common among all the migrant groups or it is more observable when the communities migrate familywise or groupwise ;

4. The nature of variation of adjustment, if any, that exists among the different types of migrants.

Methodology : The present study was conducted analyzing the secondary data on the different communities in the four cities. However, this was appreciably supported by primary data collected from different communities living in different parts of the four cities. With the help of structured schedule, data on different communities, their way of living, nature of interaction with other communities and also the ways and means through which social boundary is maintained were studied. Generally individuals who were knowledgeable and holding important positions in the associations of a particular community were interviewed. It may be added here that in this report it was not possible to cover each and every migrant community living in the four cities. It is based on the major eight migrant communities in each of the four cities. It is expected that this would appreciably demonstrate the pattern of boundary maintaining mechanism as well as the interrelationship in the context of the different communities in the four cities.

On the basis of secondary data (Census data), the major migrant communities of each of the four major cities, Calcutta, Chennai, Delhi and Mumbai have been identified and analyzed. It was tried to examine how far caste, religion or language play a role in the whole process. It may also be added here that it was not possible to examine all these issues elaborately in the context of other three cities except Calcutta. In fact, in Calcutta, studies were also made on the clubs, literary organizations, associations, welfare organizations, libraries and other publications made by different migrant communities. It maybe added here that ethnicity, ethnic relation is often the product of a historical process. Accordingly, to understand the process, historical data were also collected in the context of the four cities. The four large metropolitan cities of India, namely Calcutta, Chennai, Delhi and Mumbai contained a population of more than 5 millions each in the year 1991. Nearly one-fourth of the population living in Class I towns, one sixth of India's urban population and 4.4% of the country's total population is concentrated in these four large metropolises. The concentration of economic, social and cultural activities of these four megacities significantly contributes to their emergence as powerful centres. It may not be out of context to mention here the percentage of migrant population in the four major metropolitan cities to indicate the importance of migrant population in the concerned four cities. Thus it is seen from Table-1 (Migrant non-migrant composition of four mega cities) that migrant population plays a very significant role in the context of urban growth. As we all know, the traditional social cleavages like religion, caste or kin and the factors like language or regional background contribute in the context of maintaining ethnic relation. The four mega-cities in India contain a sizable and significant component of migrants (40%.62) in the population. The migrant components may vary from more than half of the total population of the city, as in Mumbai, to less than one third of the total population as in the case of Chennai. This corroborates the general observation made that cities of higher order in hierarchical of urban status posses a greater proportion of migrant population within it. The city of Mumbai by virtue of its size and concentration of economic activities acts as a polarizing point of a higher degree than the cities of lesser size like Chennai.

In the urban areas it is assumed that the residential concentration is not influenced particularly by the traditional social cleavages but it has been noted that the various migrant communities have distinct residential concentration in the urban metropolis. It is obvious that this type of spatial distribution of population would promote more in group intervention and thus strengthening and maintaining distinct socio-cultural boundaries. It is also true in the context of a few communities. Various communities living in Calcutta have more or less built up of separate residential concentration of their own. Thus for example, the Malayales, who have come from Kerala of South India are mostly concentrated in Behala, Rashebhari Avenue, Deshpriya Park, Cirus Avenue area of Calcutta. The Maharastrians are mainly concentrated in Bhownipur area of South Calcutta. The Oriyas are mainly concentrated in Borabazar, Bhownipore, Sovabazar, Belgachia, BBD Bag, Strand Road and

Khiddirpore Dock area, Garden Reach extends up to Metiaburz in closer proximity to Bengali and Hindi speaking Hindus. The Sikhs of Punjab are mainly concentrated in central and southern districts of Calcutta namely Bhowanipour, Behala, Mominpur. Dunlop Bridge, Garcha Road and Howrah. The Bhojpuri people are mostly found in Garden Reach, Khiddirpore, Shyambazar, Howrah, Sealdah, Entelly and Burrobazar areas of Calcutta. The Rajastheni, commonly known as Marwaries are mostly concentrated in Burrabazar area while the more affluent section are found in the southern part of the city. The Gujratis are mainly concenrated in Elgin Road, and Lansdowne Road areas of South Calcutta.

At the beginning of the 20th Century the city of Chennai (Madras) was considered as a metropolitan city. The distribution of population was fairly even. There was some concentration of population in Perambur because of the establishment of mills in the area during the last quarter of the 19th Century. In spite of the growth which Chennai city has witnessed, it could not be compared with industrialized cities like Calcutta and Mumbai. The growth of the city was found in many directions, in trade and commerce, in improved transport and communication and development of residential quarters. The population of Calcutta and Mumbai are largely made up of imported workers. The men are out of all proportion to the women. The population of Chennai is really the ordinary population of an Indian village multiplied many times. One of the reasons that accounts for these characteristics is that, migrants were attracted to Calcutta and Mumbai for different reasons rather than their Chennai counterparts. In the north, there was as greater need for industrial labour and single man migrated longer distances in search of factory employment which did not provide facilities for families. In Chennai, however, short distance migrants worked as coolies (porter) and cannel labourers on construction sites, and their wives were employed as domestics, often near the mud and thatch homes they constructed to live in it.

The city of Delhi/New Delhi offers an interesting features in the context of spatial distribution of population The city Delhi is pretty old while New Delhi is a relatively new planned one. Since a major part of Delhi is covered by administrative buildings and governmental quarters, the spatial distribution obviously is not influenced by any social factor. But a number of new areas or settlements have come up in course of time to accommodate the large migrant population who are not government officials or stay in the government accommodation. It has been noted that the following spatial distribution on the basis of different ethnic background was noticed in Delhi metropolitan area. Punjabis are concentrated in Jankpuri, Tilaknagar and MotiNagar area. Chittaranjan Park in the Kalkaji area has a large population of displaced Bengalis from Bangaladesh. They strive to maintain distinct cultural identity. Kalkalji area is inhabited mostly by people belonging to the middle class, the number in this area has been augmented by addition of part of Malviya Nagar and Govindpur resettlement colonies. There is a concentration of affluent business men in the Greater Kailash area of New Delhi. In the Vasant Kunj area there is a concentration of middle class residents. In the outer Delhi area, Badarpur, Okhla industrial area, Jhuggies of Okhla Vihar, Sariste Vihar are concentration of Bihar and Uttar Pradesh migrants. Tughlakabad has a large presence of Gujjars In Delhi/New Delhi, the two large group of minorities are Muslims and Christians. Moti Mahal area and Chandi Chawk are mainly inhabitated by Muslim people of the capital. Paharganj area has a large chunk of Punjabis, a small number of Muslims and scattered groups of Biharis.

Prompted mainly by economic considerations, the South Indians migrated to the city of Mumbai in large numbers particularly after World War I. They first settled down in the heart of the city from where ecological and economic factors gradually drove them to the outskirts of the city. This movements crystallized in the emergence of MatungaSion as a immigrant township of these migrants from the south. The development of the area shows ecological patterns. There is spatial segregation and a concentration of the community centering round the Asthika Samaj, the Bhajana Samaj and other principal institutions.

Language is also an important factor in the context of the migrant communities especially in large metropolitan cities. The census of India enumerates only the mother tongue of the enumerated person. It does not take congnizence of a language or languages in which the enumerated person is proficient with even if the degree of proficiency is higher than that is in his mother tongue. For example, in the city of Mumbai, an overwhelming segment of population are proficient with Hindi or Hindustani. But Hindi has been shown as the language of only those persons whose mother tongue is that language. In the context of multiethnic societies, the languages/mother tongue of the people of the four mega cities are grouped into four categories. [1] Languages of the state in which the city is located, [2] Languages of the neighbouring states, [3] National language Hindi, [4] urdu—a common language spoken by Muslims and many others as well, and [5] other languages.

If we examine language composition within emphasis on diversity aspect, it is clear that minimum amount of diversity is seen in the Mumbai. Less than half of the people of Mumbai have the regional language Marathi-as the mother tongue. About one third of total population speak languages other than the local and that of the neighbouring states. About one fourth have either Hindi or the Hindi mixed Urdu as their mother tongue. However, nearly the entire population converse with each other in Hindustani or Bombay Hindi which is what gives the metropolis its typical character as a mega city.

In case of Calcutta, sixty percent of the inhabitants speak regional language - Bengali and find a little over the one third of population have Hindi and Urdu as their mother tongue. From this scenario, the fact does not speak much of the linguistic variety in the city. This, added to the general impression that the people of Calcutta converse with each other outside their family environs also, in their regional tongue which is suggestive of lack of language diversity. However, in recent decades, some appreciable decline in Bengali speaking population and compensating rise of Hindi speaking population can be noticed.

Delhi/New Delhi's linguistic panorama is quite different from other three mega cities. The city is located in the Hindi heart land and it being the National capital, attracts people from Hindi speaking neighbouring states and non-hindi speaking distant areas. The fact that about eighty percent of people have Hindi or Urdu as mother tongue. The other striking features of Delhi's language structure is the significant presence of Punjabi speaking population (about one-sixth of the total population). In the city of Chennai, more than three fourths of population have Tamil as their mother tongue. Even of the remaining, an overwhelming proportion speaks regional languages of the neighbouring states. Only meagre 1.6% of people have Hindi is their mother tongue.

It can be expected, the proportion of people belonging to Hindu religion form a dominant section of the society in the four mega cities of India. However, the city of Mumbai is characterized by a relatively less proportion of Hindus living in that city. Again, Mumbai together with Calcutta, the two largest mega cities have a greater proportion of Muslim than the other two cities. The proportion of Christians is significant in Delhi. It is reflected that the relatively higher degree of religious diversity of Bombay, where the proportion of Hindu is less than in other cities, making way for higher share of Muslims, Christains and more importantly and significantly, people ascribing to other religious groups. The presence of people belonging to other religious groups like Jains, Buddhists etc. distinguishes Mumbai from other. If we examine the growth trends of persons belonging to different religious groups, it is evident that the growth rate of majority community is less than the Muslims. This is a passive that it reflects the trend of mega cities acquiring more tolerance for the people of other community. A mega city with population exceeding five million is normally expected to have a religious composition which is more broad based than in smaller cities and rural areas. Presence of religious minorities even in small number gives the city a special character. In these mega cities, all the religious groups have their won places of worship where they get the opportunity to interact with members of their own religion. This, no doubt, helps a maintaining of their own religious identity. In fact, some of the religious festivals have come core colourful, more exhibitionist than before. However, there are also cases where religious festivals attract people cutting across religion, caste-community or regional boundaries. In the large metropolitan cities e.g. in Calcutta, the local festival like Durga puja has really become a festival of all communities of Calcutta cutting across the regional boundaries or even religion. In spite of various changes that durga puja festival has maintained its essential spirit that fosters unity and amity amongst different groups of people. What was true the rural worship in the past is also true of these Sarbajonin Durgapujas in modern times. What was once completely rural has become urban according to the pujas have become a matter of joy for the whole community. Even now it exerts tremendous impact on different commercial communities of recent urban growth as decorators, fruit-sellers, people dealing with public address system and milkwallas etc. In any case, though secularization has been the order of the day we see that these pujas are not going to be affected by that similarly the non-Christians equally enjoy during the christmas days and the religious places of many other communities are visited by the other communities which has helped to an appreciable extent. in minimizing the socio-cultural boundaries and differences.

In the context of migration, it has been noted that Calcutta received two kinds of migrant steams. Seasonal migrants from rural areas in the off-peak periods of the annual agricultural cycle and more or less permanent migrants who settle in the metropolitan area with or without their families. The permanent migrants include two broad group. Those who have traditionally come in search of jobs or of the other positive attributes of the big city and immigrants from Bangladesh the quarter of a century or so of its existence. Since the major sources of migration of metropolitan Calcutta are two of the states bordering on West Bengal (Bihar and Orissa) and the eastern part of one of the non-contiguous states (Uttar Pradesh) A considerable proportion of the migrants from Bihar and U.P. are the Muslims, the immigrants from Bangladesh, on the other hand, are Bengali speaking and predominantly Hindus of the middle and upper castes. It has been observed that the growth of cities alters many customary practices. Cities have tended to be melting pots, and industrial cities in particular have been graveyards of tradition. But interestingly, the situation in Calcutta presents a somewhat different situation where caste and community background, in many cases are very much related to certain occupations, certain migrant groups are associated with specific occupations. In fact, castes are sometimes intimately connected with certain specific occupations. Bose 1968 has noted that ethnic groups tend to cluster together in their own quarters. They are distinguished from one another not only by language and culture but also by broad differences in the way they make their living. Naturally there is a considerable overlap, but this does not obscure the fact that each ethnic group tends to pursue a particular range of occupations.

As it has already been mentioned, in this paper the major discussion has been made with reference to Calcutta and certain observations or comparisons have been made with reference to other three mega cities. Languages tend to persist and there are schools, belonging to the communities where instruction is given in the corresponding vernacular. A few upper grade schools have English as their medium of instruction and of late they have been becoming increasingly popular among the affluent section of all communities. In spite of this small exception, language differences persist. This is heightened by the fact that there are few voluntary institutions in which several communities can meet frequently in order to satisfy their common civic or cultural needs. The Durga Puja, a Bengali festival does combine the less affluent Oriya or Hindi inhabitant with the Bengali. Most of the migrant communities in Calcutta have their own educational institutions, libraries, dailies and magazines in their respective languages. In many cases notable magazines and papers published in the regional languages are available in all the major metropolitan cities. Again where the migrant population is large and there is a demand, dailies and particularly magazines are also published in own languages by many of the migrant communities. Naturally there are also printing presses in Calcutta and other mega cities where apart from publishing papers, magazines, question papers of schools offering a education in regional languages and invitation letters for social ceremonies, leaflets, etc. are also published. They converse in their own language while interacting within the community members. On the surface it may appear that the migrant communities are living in isolation but in reality it is not so. As a matter of fact, there is a link language, Hindi and also English which are invariably used by all the migrant communities while interacting with others. Incidentally, it may be added here that Hindi is more popular among the unskilled labourer class while English is for middle class and upper middle class people. It is also widely seen that the migrant people pick up the local language when they stay for a long durations and interact with the local population through the local language. Thus it is not uncommon to find a Tamilian speaking Bengali or a Bengali staying in Mumbai speaking in Marathi. Most of the communities living in Calcutta have their welfare organization to support people belonging to any caste or community. The different welfare activities are done by these organizations. As for example, the Marathi-speaking people, Maharashtra Niwas in Calcutta happens to be the centre of all cultural activities of Maharashtrians in Calcutta. In this centre, there is a committee called Maharashtra Mondal who has been organizing social, cultural and sport activities for the members and their families. Nine educational institutions are in Calcutta particularly for the Oriyas located in the area where mainly the Oriya speaking people are concentrated. Among the Sikhs, the Gurudwara plays a very important part in their socio-religious and cultural life. Besides the smaller, there are 121 major Gurudwaras in Calcutta through which different welfare activities are initiated. There are also different associations generally associated with caste or regional background to look after the interest of the concerned population. It has noted that during Ganga sagar Mela festival in southern part of West Bengal near Calcutta, camps are organized by some voluntary groups in Calcutta Maidan. They mainly come from hindi-speaking states-districts of Bihar and U.P. They provide free shelter, food, medicine, transport and even postage also. These organizations are named by the different caste group or regional affiliation. These organizations also provide help to the migrants of their own community or region when they come to Calcutta on other occasions also. From the above discussions, it may be reflected that in Calcutta or other mega cities, different ethnic groups are isolated by maintaining their different identity symbols. But there are also associations, clubs which are not really connected with any caste, place, region or occupations. These are mostly the affluent clubs where higher middle class people or the senior official of different government and private organizations come for various purposes mainly recreational and even for some business purposes. Again, there are also quite a few associations apart from the political parties like rickshaw puller's associations, hand-cart association which comprising of people belonging to different areas and communities.

CONCLUSION

The four large metropolitan cities in India namely, Calcutta, Chennai, Delhi and Mumbai. A large number of communities with their distinct socio-cultural traditions, religion, language and belonging to different socioeconomic categories have migrated to these large cities and staying here for a varied length of time. This paper highlights various pattern of ethnic interaction with the local society and the process of interrelationship in the urban milieu. It may be mentioned here that the present study was conducted on the four major metropolitan cities in India with particular reference to Calcutta. In this study, the emphasis was given to examine the pattern of inter ethnic interaction and ethnicity, contributing to the formation of sub cultural groups which simulate to the regional cultures in the urban areas.

It is obvious that this pattern of spatial distribution of communities would promote more in-group interaction and less interaction at the inter-community level, thereby strengthening and maintaining distinct socio-cultural boundaries. It is also true in the context of occupation to a certain extent atleast in the context of a few communities. Language is also an important factor and many of the migrant communities in Calcutta have their own educational institution, libraries, magazines and dailies in their respective language and even clubs and welfare organizations. Caste, occupation, economic status and residential concentration are other important access along which interest groups develop. But language has come to be a symbols of regional culture and aspirations. Language becomes one of the major factor of political, economic and cultural affiliation as well as differentiation. But since language is largely a given or ascribed characteristic, it becomes an important particularistic influence in the Indian multi-lingual metropolis.

The religious groups have their own places of worship where they get the opportunity to interact with members of their own religion. This no doubt helps in maintaining one's own religious identity. In fact, some of the religious festivals have become more colourful, or exhibitionist than before. In metropolitan cities, though language is an important factor, sometimes so called geo-political boundaries become less important and the cultural boundaries become more meaningful, perhaps the best example that can be cited here refers to the Mythilis and Bhojpuris living in Calcutta, two distinct communities of Uttar Pradesh (U.P.) and Bihar states in India. Thus the Mythili speaking and Bhojpuri speaking people come from two contiguous regions of U.P and Bihar but belong to distinct cultural zones. Thus a Bhojpuri can also be a Behari and the migrants from Bihar and U.P. are generally all Hindi speaking people. Thus, an individual is always likely to have multiple identities.

From the above discussion, one should not assume that there is no scope of interaction among different migrant and the local groups In order to understand the urban social situation and integration, it may be necessary to examine the urban community as a whole and smaller communities living within it. So one must study at two level—

1. The integration of the total urban society ;
2. The integration of the sub units of the urban society.

In order to reconcile the diversities based on religion, caste, culture, economic and political identities, problem of national integration is needed to be tackled in terms of a genuine secular approach which keeps various diversified groups together. This diversity is an asset and creates a beautiful mosaic of culture, yet, it has created a complex problem for nation building. Each ethnic group though participating in the nation building process, wants to preserve its own distinct socio-cultural identity.

It has been observed that the various communities who have migrated to these cities bring with them their own cultural patterns, value orientations, goals, patterns of behaviour and stereo types to the new setting. In this circumstance adjustment necessitates internationalization of the values, norms and patterns of behaviour and other relevant aspects of the new culture. They have to face various problems in the process of internationalization of an altogether new set of values, norms and social traditions. Therefore, the migrants may choose to fall back on the original cultural patterns and standard of behaviour. The present enquiry was directed to study the mechanisms by which the immigrants maintain their own structure and orientations in the urban society. The factors which condition the interaction of the immigrant community with members of other communities in the urban society, and the patterns of integration of the ethnic community into the urban society have also been studied to a varying degree in the context of the four large metropolitan cities. From the above discussion, one should not assume that there is no scope of interaction among different groups and the different ethnic groups live in their own islands. Language tend to persist. But there are a few upper grade schools have English as their medium of instruction, and of late they have been becoming increasingly popular among the affluent of all communities. In case of religion, there are also cases where religious festival attract people cutting across religion, caste-community or regional boundaries. In the large metropolitan city like Calcutta, the local festival like Durga Puja has really become a festival of almost all communities of Calcutta cutting across the regional boundaries or even religion. The communal pujas a Bengali innovation does combine the affluent Oriya or Hindi inhabitant with the Bengali. In spite of various changes, the Durga puja festival has maintained its essential spirit that fosters unity and amity amongst different groups of people. What was true the rural worship in the past is also true of these Sarbojonin (for all) Durgapujas in modern times. In the urban area these pujas (worship) have become a matter of joy for the whole community. Even now it exerts tremendous impact on different commercial communities of recent urban growth as decorators, fruit-sellers, people dealing with public address system and milk wallas etc In any case, though secularization has been the order of the day, we see that these pujas are not going to be affected by that. Similarly the nonchristians equally enjoy during the Christmas days and religious places of many other communities are visited by the other communities which has helped to an appreciable extent, in minimizing the socio-cultural boundaries and differences.

In Chennai, another megacity, the celebration of Ganesh Chaturthi which is the most important religious festival of Maharashtrians has been increased from three to ten days and the immersion of the idol in the sea by taking out a procession on the tenth day. The other people mostly the Tamilians also celebrate this festival in a very colourful manner.

There are a number of clubs where people belonging to different caste/community region or religion assemble but all these organizations cater the need of the elite affluent sections of the society. Even in the context of sports, people tend to support clubs belonging to different regions and religion. Besides, working together or following a common profession, people belonging to various socio-cultural boundaries. Sometimes participation in a movement or struggle to safeguard the common class interest, no doubt, brings people of different communities or socio-cultural class.

It is also viewed that ethnic system is characterized as adaptive plasticity and adaptive involution. Adaptive plasticity refers to the use of the symbols of cultural boundary, and adaptive involution refers to the accumulation and modification of the old symbols. Ethnic plasticity and ethnic involution are two complementary processes which sustain or maintain the effectiveness of ethnic system.

At the level of the individual migrant we are concerned with the history of the group he is born into, the geographical characteristics of the region of origin that define and shape his world-view, and its religious and cultural value system. The social structure of the region which determines the social status and class of the migrant and his family have also been considered. Although groups tend to have more fixed boundaries in the setting of the village or small town, these are considerably more amorphous in the larger environment of the city. It is here, that new networks are established to define interpersonal relationships. In the world of city, the migrant has many identities, in one context he may identify himself by his caste, in another his language, and in a third by the larger region in which he resides. In this sense, ethnicity is situational. Yet, one often finds that in spite of the emergence of new relationships in the city, these are overlapping identities of groups by village origins, caste, kinship, occupation and residence which provide continuity with the place of birth.

It must be admitted that the cultural pluralism has existed in the cities of India to a great extent, which perhaps have helped in maintaining cultural differences and identities but at the same time new adaptive identities have also emerged which have acted as cementing forces among different communities at different levels often preventing the narrower identities from sharply focussed. It helps to bring the mosaic of Indian culture.

TABLE – 1

MEGA CITIES OF INDIA

Migrant, Non-Migrant components of Population - 1981, 1971

City	Year components	Migrant components	Non-migrant	Total
Calcutta	1981	31.06	68.94	100.00
	1971	32.23	67.77	100.00
Chennai	1981	34.45	65.55	100.00
	1971	33.98	66.02	100.00
Delhi	1981.	44.42	55.58	100.00
	1971	49.23	50.77	100.00
Mumbai	1981	51.33	48.67	100.00
	1971	57.00	43.30	100.00

Source : Census of India

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RECREATION, GAMES AND SOCIAL CHANGE : AN ANTHROPOLOGICAL OBSERVATION

Abhijit Das

Abstract :

The recreational activity called 'Game' is an essential part of human life. The patterns of games vary according to the interaction between individuals or group involved under techniques and rules. The characteristic pattern of interaction are developed for each people and hence games are related to social system. Games show increasing importance as pastime recreational activity in modern society. Gradually it has become a distinct subcultural activity which covers a wide range of diversified social relations. The present paper thematic in nature, highlights on the increasing importance of value of game in the present day society which serves as forces or indicators/microcosm of social change under modernization.

Recreation is an aspect of culture. Leisure time recreation with its existence in some form or the other exists in different periods of human civilization. Patterns of recreation varies from society to society, hence culture to culture. It plays a refreshing role to each society and culture. Through recreation the toils of different day to day activities is removed and it leaves the dynamics of culture afresh. Today we perceive recreation as pastime activities which is a product and a form of realization of surplus time in a given society.

Recreation provides enjoyment and satisfactions to a person which is the demand of his innerself. In traditional society, recreational activities are characterized by simplicity and spontaneity. Society changes through time, leads to peoples' fulfilment with new traits as well as discoveries and inventions. This enables the group to create new social environment which in course of time also creates new recreational patterns and provisions. In modern society some hours in the peoples' day-to-day life are fixed for recreational activities in their leisure time. The corporate, all-pervading recreational activities like cinema, theatre, music, games, painting, etc-have become very common in the present day society. These activities collectively play important recreational role in modern society. All societies have shown concerns regarding the patterns of recreational activities, including games pursued by their members. In fact, societies provide a socio cultural context within which games are to be carried on.

In primitive societies, games were the integral part of religious practices. These practices, according to anthropologists, were of two types : those related to rites de passage and those related to religious festivals. The former took place in the important events in the life cycle, whereas, the latter were generally associated with the productive processes of the community life such as sowing, harvesting, hunting and many other festive occasions. Such activities and festivities like singing, dancing, dramatic performances, jumping, archery, wrestling or fencing are reported to have been associated with above religious events (The new Encyclopaedia Britanica, 1990). Durkheim in his famous book, The Division of Labour in Society (1947), has emphasized that the social system of a primitive society is based on mechanical solidarity backed by collective conscience reflected through customs and traditions. Games and allied activities in such a society were obviously integral part of their larger socio-cultural traditions.

Having outlined the basic nature and conceptual profile of recreation as a vital aspect of human culture in the first part of the paper, now we may devote in the second part to discuss briefly the meaning, nature and importance of games in society.

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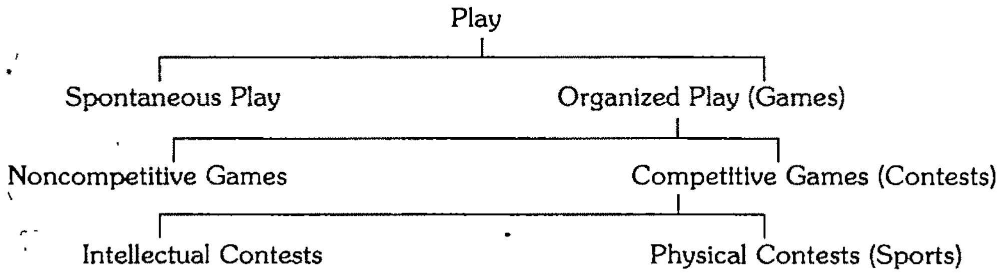
GAME - ITS MEANING AND NATURE :

The New Encyclopaedia Britanica (1990) define 'Game" as 'a universal form of recreation generally including any activity engaged in for diversion or amusement and often establishing a situation that involves a contest on rivalry". Similarly, Hunter and Whitten (1976) defined games in the Encyclopaedia of Anthropology, as recreational activities, usually competitive, characterized by play organized around agreed upon rules.

All definitions of game are arbitary because, it is a recreational activity hence a part of culture. Some scholars conceptualize games as a family or activities too loosely related to precise definition. So, the meaning and nature of game demands outline analysis of its relationship with other most commonly used interrelated key-terms, 'play' and 'sport'.

Many scholars try to make a relationship between play, game and sport. The first and foremost concept of such relationship can be expressed in the form of a simple diagram as viewed by Huizinga (1938) in Homo Ludens : A study of the Play Element in Culture. He shown play as a common aspect of culture.



According to the above diagram, one can easily conceptualize Play is a type behaviour or action. From a biological point of view, therefore, it might make some sense to regard play as an exercise of voluntary control systems. It has never applied to behaviour which meets individual or group survival needs. Play is free spontaneous activity engaged in voluntarily. And this, it is not for any cbjectives or ends. Games are organised from 7th play which includes noncompetitive and competitive categories. The latter is known as Contest and the organized competitive physical contest is termed as Sport.

Moreover, some times we commonly use the term play for the action or activity of games. Such as 'playijng a game' or 'the game people play'. From the cultural point of view, it is usual to emphasize that play is unique, and individual, but ephemeral, whereas game is sufficiently systematic, that, it may be repeated by others in other places, because of its systematic pattern and their predictable outcomes. Play, on the otherhand, is less systematic and is open-ended, with respect to outcomes. Again, games imply some opposition or antithesis between players as well as teams. Sports may be defined as organized games with much physical prowess or sometimes as organized althletic competition. But in modern concept, sport primarily involving physical activity which can be distinguished from game by the degree of organization involved in establishing and conducting the activity. Last of all, play, game and sport can be considered along a continum of organized activity. And lastly we can conclude that they are something that are defined as such by a culture. The organized physical activity or game qualifies as a sport only when it becomes competitive, institutionalized and is motivated by intrinsic and extrinsic factors.

GAMES IN SOCIETY - ITS IMPORTANCE AND COVERAGE :

It has conceived from the foregoing section that games are recreational activities as well as important branch of play, characterized by (1) organized play, (2) competition, (3) two or more sides, (4) criteria for determining the winner, and (5) agreed upon rules. Games are important means of socialization. They are often the means used to teach the skills required for gaining a social living. In a broad sense, games provide individuals with models or simulations of cultural activities.

In a general study, Caillois (1961) relates various types of games and their functions in society – games of competition give a sense of personal merit, games of chance allow one to feel favoured by fate, games involving simulation or mimicry allow one to step into another's position, games involving vertigo alter one's perceptions.

Roberts et al. (1959) classify games according to their relative stress on physical skill, on chance, or on strategy. Roberts infers that games of strategy are most prevalent in class-structured societies with high levels of political integration, while games of chance are correlated with religious activities and a society's belief in reasonably benevolent gods.

Within the framework provided by a given technique, a complex game may be developed which controls the interaction of the individuals taking part, and yet allows them opportunities for significant variation in their interaction rates. It is to be noted that the game builds up high rates of interaction not only within team and between teams, but also between the players and their audience. The tremendous importance of games in our own society is due to the fact that they provide regular opportunities for interaction within habitual teachniques, using well known symbols, ordinarily learned in childhood, and thus provice a constant framework in a society where changes in interaction rates are imposed by the technology and the institutions. Characteristic patterns of interaction are developed for each people and thus games are related to social system (Chappel and Coon, 1942).

Societies as historical systems have shown that game have been a continuous social fact throughout the ages. It is also true that the amount of time devoted to games, the intensity with which they are pursued, the forms they assume, and the degree of their refinement have varied from society to society and from time to time within the same society. This fact essentially affirms that there is an interconnection between the social structure of a society and the activities of games.

The main thrust of the argument put forth so far, goes to establish that the society and games are closely interrelated. Rather games are intricately interwoven into the fabrics of the society. As such, the two are inseparable. Sociologists Sharma and Vir (1989) presents a schematic view of their relationship in the following table.

TWO WAY TRAFFIC BETWEEN GAMES AND SOCIETY

Social Inputs in Games	Sports Outputs for Society
1. Goal determination	1. Human Resource Development
2. Support provisions	2. Socialization
3. Direct and Channelization	3. Social Control
4. Cultural facilitation and restriction	4. Nationalism
5. Rewards and awards	5. International Understanding and peace

The above table, in fact, explains the social costs and benefits of institutionalized games as well as sports. Sports continue as a universal social activity. That is why authropoligists and sociologists of games and sports have claimed that game performance can be used as an indicator of social progress of development; or games are the mirror for the culture of a given society.

GAMES AND SOCIAL CHANGE :

To shift the attention to the view of 'games and social change' it can easily be inferred from the foregoing section of discussions that recreational games play most vital and rather crucial role in bringing social change. First to make brief mention of psychological and philosophical views of games in modern society. Scholars pointed out that the primary and secondary participants in games show certain specific personality fraits with a strong need for achievement.

In the second place, taking functional point of view, one of the important as well as prominent functions of games is that of validating society's existing values.

It is worth mentioning that games in modern society have long been intimately related to the social, economic, political, educational and religious institutions. In the context of the relationship between social structure and recreational activities, it may be said that games have flourished comparatively in a dense population having occupational specialization with sufficient leisure time. It means that complex urban societies are more productive of recreational games particularly, the organized games, as compared to traditional and agravved societies. Similarly varying social structural, economic and cultural influences among the rural and urban group differently shape and fashion the game activities generating new forms of social interaction. Thus relatively informal, unorganized and participant oriented rural pastives tended to become organized, commercialized, highly specialized and diversified relation oriented forms of mass activity. It is a common observation that politicians are eager to identify with game celebrities and successes of game teams. The economy is also activated by the huge amount of money spent on various items and stages of games in the present day. Many religious organizations may be seen drawing up various game programmes and some ritualistic performances are also found in many game events as well.

Developed system of communication, urbanization and industrialization proved a paramount importance in changing the nature, extent, forms and function or role of games. Urbanization serving the goal of modernization which ultimately affected greater physical proximity with more opportunities for completitive games.

Industrialization with improved mass media facilities, proved instrumental in bringing technological revolution that forms games as global network through regional national and international level.

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MORPHOLOGY OF MODERN ART AND TAGORE

Samar Bhowmik

At the outset we may be agreeable to - contrary to their perspective, broad need based etherial / technocratic developments in diffusion, appearance of art seem to be necessarily discriminative from period to period, races to urban populace, further in their geographical limitations. Understanding of spectrums of Morphology of art, therefore, is very much important from the point of view of identification or classification.

Prehistoric and primitive men largly depended on animals they hunted or fertility of Flora and Fana, mercy of nature, fears into magic rites, urge for existence, rituals, cultures, dreaming, spirituality and religious belief, purpose of these objects were very much didactic and illumination of all pervasive anatomy dominating in their cosmos.

In the mythology Egypt, China, India, Greece, North America, Occanic region, Africa, Rome and Mexico various problems, e.g., proportion, diamension, distortion, accentuation, break and mural like approach developed to put emphais on the super power/god and relatively lesser emphasis on lesser creatures. Symbols, suggestivity and met-aphor were inscribed just to control rush of subjectivity.

But our realisation of modernity in art came in the process of discovery of most of the primitive and prehistoric elements as well as mythological canons of some important civilisations brought metamorphosis to creativity. Changed approach to celluloid, space, volume, unit, synthesis and analysis of different branches of science architecture, calligraphy, etc. applications and communications, action and cross cultural interaction, Folk art and idoms changed the course of art and turned this to intellectual property uncomon and unfamiliar for the sake or art. After this entirely new chiaroscuro lift of art evolved mainly through experiences and experiments of exponents, e.g. of Goya, William Blake, Henry Fuseli, Edvard Munch, Gustav Klint, Henri Matisse, Henri Rousseau, Pablo Picasso, Wassily Kandinsky, Franz Marc, Joan Miro. Paul Klee, Jean Dubuffet, Mark Tobey, Sam Francis, Judy Watson, Karen Casey, Gordon Bennett, Trevor Nickolls and some other artists of Europe and Australia with the German extremists appeared in the sphere of Art Nouveau, Surrealism, Abstract expressionism, Cubism, Impressionism, post-impressionism, futurism, op and pop art and ultimately action painting from America.

Dream, automatism, calligraphy and ultra perspectivism and applique were meticulously combined to achieve ultimate objective to establish neo-expressionism first modern trend in India by the poet genious Rabindranath Tagore. Unlike his counterpart in Europe he was never off the side of sky and earth. Naturally, he could visualise dreams, elements of dreams and songs, the common vegetations, Landscope, men and Women and cycles of his literacy creations. Tagore could do this firstly, because of his brith in a great environment, secondly because of his intimate association with greatest intellectuals and art movements of entire Europe and finally his identification with the works of European exponents e.g. Wassily Kandinsky, Jean Dubuffet and Mark Tobey who made tremendous experiment on metaphysics, sophisticated, primitivism and calligraphy. Rabindranath found Four Facet creators of Neo-Bengal School, e.g., Gaganendranath Tagore, Abanindranath Tagore, Nandalal Bose and Jamini Ray. Nivedita's ideal of the school as expressed in her words 'An Indian Painting, if its to be really Indian and really great, must appeal to the Indian way ....' was profoundly captivated by the aforesaid masters on whom Tagore's dependence gradually depreciated due to his expectation of progressive modernism in Indian Art. Tagore theoretically felt : 'Artists

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of the past created images significant of the necessity of these time and place – universal and timeless. Unification of art with general literature is, therefore, so valuable because liberal education by means of these combined forces will foster the whole development of personality, uniting intellectual activity with physical skills, and fusing in them in a creative process those most primal attributes of men'. Through his art exercises Tagore tried to develop this attribute, which appeared new to modern exponents of our contemporary time.

In all their components - composition, drawing and colouring Rabindranath's Paintings express his daring attitude. Starting with erasures on manuscripts – those abstract rhythms of lines genuinely of his own - he went on to designing quite realistic forms and last of all to mature those instead of relying merely on life movements amidst the monochromes, the adorned them with rich, attractive sombers.

While settling line work in a perfect balance - his whole imaginative and suggestive process proceed in a beautiful wandering from the written world to the world of pictorial nebula of cosmos. The rolling, guivering, heaving and fleeing shapes – get flowering out from the abundant ocean of the unknown - are playfully dreamful. Of these Tagore himself said –

> "The universe has its own language of gestures. Every object proclaims by the dumb signal of lines and colurs the fact it is not mere logical abstraction but it is unique in itself, it carries the miracle of its existence".

The red dawn of future broke up in his drawings. The characters of line and colours correspond the moods-fierce and firy in red-cold-palpitating darkness of the times of Pharaoh, Aztecs and Negroids of the spirits of the higher strata. Thereomorphism, tatto, totem, mask are other aspects of primitive art Tagore accepted profusely unlike his European Counterpart.

Tagore's art, being embodied with so much complexities of expression may be termed broadly as Creative Inter-action. In which rhythm of texts has a sort of intermingling with rhythm of forms-which ultimately unites the visual and verbal courses towards ascertaining a mystic conception of the spiritual world. This creative interaction was the most dominating factor of his wonderful life. Any consideration of Tagore's literacy achievements, therefore, should be started with a study of his assimilated views of art and literature of his life.

When Abanindranath was creating a Renaissance of Modern Indian Art in Bengal deriving his inspiration from the refined Indian Classical Schools and when Jamini Roy was turning to folk art for inspiration, a revolution was takeing place in Tagore which nobody took serious notice of certainly left a communication gap. The reason why he has not shown any of his paintings in India (excepting a preparatory show in Calcutta in 1928) before he exhibited them elsewhere, was told to his intimate ones, "I have not shown my paintings to this country. Here most people do not know how to see a picture. First of all they look to see whether the faces are good looking or not and how to do whether it has become a work of art or not and how to do it that can not be explained or taught. One must develop that power, get into the habit of looking and one also needs to have instinctive insight to be able to see a picture. It cannot be done just by any one. That is why I never wished to exhibit my paintings here".

During the 20s Tagore's eagerness for rehabilitating his spontaneous art got some recognition of some artists of the western counteries. Fortunately for him he could meet Gropius at the Bauhaus School in Germany in early 20s and could make first hand assessment of his own artistic philosophy. A versatile man of the East met a galaxy of versatile personalities of the West e. g. Lionol, Feininger, Johannes Itten, Wassily Kandinsky, Paul Klee, Garhard, Marks, George Muche, Lothar Schreyer, Sophic Korner, Margit tory Alder, Nicholas Roerich and Mahaly Nagy. Amongst them Kandinsky, the Russian born German artist was the main figure.

Kandinsky argued for the inner world of man i.e. the metaphysical element in art, as the true source of artistic was the main figure. Kandinsky argued for the inner world of man i.e. the metaphysical element in art, as the true source of artistic creation. He was also advocate of Automatism. In this point Tagore has affinity with him. Automatism and spontaneity are two closer terms almost with same interpretation. It was learnt that an assessment discussion was held at Bauhaus at the request of Count Keyserling, who observed 'Rabindranath, the poet and artist impressed me like a guest from higher and more spiritual world. Never perhaps have I seen so much spiritualised substance of soul condensed into one man. After this meeting at the request of Tagore about 83 aquarelles, drawings and graphics of all the above artists, excepting those of Nicholas Roerich and Mahaly Nagy were brought to Calcutta in 1921 for an exhibition. A good number of people might have witnessed this exhibition but a few people knew that exchange value of ideas croped up therefrom. In fact, all these gave him opening as an artist-cum-connoisseur on the theoretical side.

Since 1928, he hold 12 Exhibitions of his paintings in Europe, America and South Asia. His impression of such venture was very much exciting and fruitful. Also due to this initiative his recognition as the first International Artist of Modern India came to him.

TRANSFORMATION OF ONGE WOMEN THROUGH DEVELOPMENT

Dipali G Danda

Most of the problems the tribal people suffer from are often not very different from that of the millions of non-tribals of the country. These problems are primarily of poverty, illiteracy and malnutrition. However, tribal societies are relatively free from gender problems that is inequality between sexes. Still non-tribal societies are devoid of vices like dowry, bride burning, discriminatory treatment to girl child. though wife beating is reported from certain parts of the country. In general, women in tribal society enjoy a better status in comparison to their non-tribal counterparts Tribal situation in India, however, is not a uniform one as tribal culture are also equally varied like various non-tribal cultures. At present the tribal societies in India are found in all stages of techno-cultural development - from hunting gathering to settled agriculture.

When it is the issue of status of women in tribal society opinion differs. Generally it is believed that cultural levels have relation with status of women. Lower the level of culture lower the status of women in the society. "In almost all the institutions in the tribal societies, the women have fought a losing battle for a long time. For instance. the custom of payment of bride price, found in most of the tribal societies, is an affirmation of male domination both at symbolic and empilrical levels" (Roy Burman 1978: 24). Often bride price and dowry are treated as part of the same institution but its connotation differs. When I first worked among the Dimasa of the north east India discovering their bilinear double descent system and considering their work participation 1 noticed the women in that society enjoy relatively high status. We the women who are exposed to dowry system considered bride-price prestigious for women in the society. While working with the Dimasa women I found that they also had no less anthropological query about ourselves. They inquired about our marriage custom. On hearing the custom of dowry they considered us lucky, and remarked,'you can buy the boys'. Those women though had enough freedom and privilege in the double descent system considered bride-price derogatory for their status. then I thought we the anthropologists ,many a times analyse and explain the tribal social phenomena without any insight of the people concerned However, the men in that society explained bride-price in ideological term as token honorarium for the girls' matriclans. Seldom anybody feels that women bear different notion in this regard.

There is reverse opinion also which subscribes to the view that the tribal women enjoy relatively better status. There is no comprehensive work on this topic which can speak for majority of the tribes in the country. At the present state of knowledge it can be said that the tribal women present an anomalous position in contemporary India. The term status has been conceptualised as a position of women as an individual in a particular society defined by her designated rights and obligations It has been observed that everywhere women have important economic role but that only cannot ensure her better position in the society. Sachchidananda (1978) rightly pointed out that the status of women is not a function of their economic role in a particular society, it is primarily determi ned by the social structure on which a society is based.

I had the opportunity to work among different tribal groups of varying technocultural efficiency - ranging from hunting-gathering to settled agriculture About the women referred in the previous section are shifting cultivators In the process of hoe cultivation women,s participation is very important; But in the case of settled agriculture also women's participation in subsistence activities is no less important While working among the women of Chattisgarh it

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has been observed that women share rather more work load of agriculture than their male counterparts. Of all the groups 1 worked 1 found that women in hunting-gathering community are best treated and enjoyed better status in the society. So level of culture, I think, cannot always be associated with the status of woman. The available materials in this regard suggest that social structure as well as women's participation in subsistence activities jointly responsible for differential status of women in the society in general. The hunting gathering community whom I refer here is the Onge of Little Andaman.

The Onge represent one of the most backward tribes in India who still do not pursue any productive subsistence activities in true sense of the term. Still today they like to continue foraging economy. Though they have been settled in two areas of Little Andaman they have not passed through the process of sedentarisation and thus no marked change is observed in their traditional values and ethos of foraging culture.

It is a well known fact that th foraging community needs a larger area for their survival. Once the entire island of Little Andaman was their command area. Their population is decreasing fast since their contact with the outside world. Now partly for their interest and partly for the interest of the greater society they have been given settlement in two areas of Little Andaman during earlyr0s Since then they have been exposed to various developmental programmes initiated by the Andaman Administration. In this process of sedentarisation they have been provided with individual hut where a man lives with his spouse and young chi:ldren In the olden days the onge used to live in corale (temporary hut) with his wifee and young kids while in the forest during the summer and at that time also it was i looked after by that particular couple only. Now they are subsisting on free ration in The form of cereals supplied to them. Free medical aids are also made available to them.

From the subsistence point of view hunting is still their basic economy~ As food is the primary concern to such primitive community like the Onge the demand and supply of food determine most of their activities. It is observed that the cereal supplied through ration have only substituted the supply of carbohydrates in their food which they previously used to procure from the forest. But whole of protein needed in their daily food is still acqui red through hunting and fishing During 1963 Bose observed animal food accounted for over 75% of their average daily food; in the late eighties also we found that their dependence on protein food has remained almost the same and thus they are still basically hunters. The entire area as marked for them is 110 sq.kms. No esti mate has been made about the land which may the needed for them to subsist on their traditional hunting gathering economy. Instead efforts had been made to disassoci ate them from their age-old way of life and ma~de them habituated to settled way of life. The entire process of transformation was neither gradual nor a phased onel rather i t is an abrupt change from nomadic hunting gathering economy to sedentary wage earning institutionalised economy. Without Introduilng a new economy and new activities new krnd of food in the form of cereals rlave been introduced to these people through free supply of ration. Neither they know the art of cultivation nor the land Is suitable for cultivation. But somehow with free supply and zontinuous goading, by now they have developed taste for such type of food As the food reaches them without effort they also do not feel interested to produce them Besides, there needs a great leap to reach to the stage of food producing from the stage of food gathering for which the Onge are not equipped both psychologically and technologically.

The development agency though tried to introduce many more innovations starting from formal education to medical aid the most successful one may be called the innovation of cereal food. In fact, this particular innovation has major contribution in transforming the life of women in onge society.

In hunting gathering society elsewhere in the world people's dependency on plant food is more than animal food and major bulk of food is collected by womenfolk (Devore 1969) as because hunting of games is always uncertain. Still the hunters enjoy high status in the society perhaps due to physical prowess and risks involved in hunting activities. In case of the Onge the situation is different. Due to their advantageous ecological setting - sea on the one hand and forest on the other major bulk of food of the Onge was to be procured through hunting and fishing. The forest of Little Andaman is abounded with pig population. So pig meat formed the major food of the Onge. In those days woman's role in procuring subsistence through collecting of roots and fishing was also no less significant. Division of labour on the basis of age and sex is noticeable. It is almost universal that among the huntergatherers hunting is a man's job i.e. the works require hard labour are mostly done by women As Bose observed (1964) : "Fishing is practiced both by women and; men women do not use bow and arrow and do not go out to fish in the open sea. They always prefer to catch in the creeks and streams with the help of nets. It seems in the primitive communities sex based division of labour is also related with gender specific expertise Making of bow and arrow is entirely a man's expertise while weaving of fish net is the expertise of women only. Hence men used to go for pig and turtle hunting and the women used to gather roots and do minor fishing in the creeks.

The whole pattern of subsistence and tenet of division of labour has been disturbed with the introduction of cereal food. Subsistence activities in terms of food quest made the entire web/nexus of Onge culture. Till the introduction of cereal as staple, animal and plant food interchangeably form the staple and subsidiary food. In fact their food was combination of meat, fish, roots, tubers, fruits and honey. Since the Anthropological Survey of India has been working among the Onge for a long span of time we may compare the gathering and hunting activities of the, Onge women and men in terms of food gathered in two different period. Incidentally data presented here have been collected from the same settlement. It may be mentioned here that one of the large old settlement areas has been converted to the present day rehabilitation area.

Table 1

Comparative statement of average daily food gathered by the Onge

Food Items	Time Period			
	1963 – 64		1988	
	Kg	%	Kg.	%
Pig	19.22	50.31	13.02	75 52
Fish	7.47	19.55	2.18	12.65
Turtle	1 15	3.01	1.90	11.02
Sea Shells	0 46	3.01	1.90	11 02
Crab	0.73	1.91	—	—
Tikala (plant)	4 93	12.90	—	—
Titakoru (plant)	0.88	2 30	—	—
Gege (root)	2.83	7.41	0.11	0.64
Others	0.53	1.39	—	—
Total	38.20	100.00	17.24	100 00

During 1963-64 the Onge derived food materials through hunting and gathering only. Pig and fish were the major food constituting 50~•13% and 19.55% respectively. Vegetable food had also significant share in the diet of the Onge. In 1988 when we worked among them the position of pork and fish Remain almost same j rather pig contributes 75.25% of food supply. This increase may be due to seasonal variation though pig hunting may be practiced through out the year. Significant change is marked in case of plant food collected through gathering by women, while no major change has taken place in the sphere of hunting by menfolk.

This replacement of plant food has a far reaching implication in the life of the Onge especially the Onge women. No doubt with this change the burden of outdoor activities of women is minimised but that has been replaced by d~domestic chores like cooking and cleaning of utensils. In fact in earlier times the Onge women were almost free from cooking. The main item of food being the meat, men were primarily responsible for its cooking. In fact there was no sharp division of labour in this regard. Since men participated in cooking and attended to other domestic chores, Onge women in those days used to get more time for leisure. Now that situation is changing very fast. Consumption of cereal as food is not the only item that has been introduced to the Onge, the entire food complex of alien people is being thrust upon them. As a result, the Onge women have to sacrifice their freedom, leisure and enjoyment for the so-called development.

Due to ensured food supply the movement of the Onge women has got restricted within the settlement. However, sometime to overcome the monotony of the sedentary life the women move in group to the forest for the purpose of gathering roots and tubers. During summer days most of Onges, to avoid the hot sun in the coast where their settlement is located move deep into the forest and enjoy their life in their own way as because during that time forest is full of fruias. In summer time except for one or two Onge who are engaged in some permanent work either in power house or health centre most of Onge families shift to the forest. Barring these summer days women are mostly available within the settlement only The Onge women of bigger settlement now a days do not go for fishing Elderly women sometime 30 for crab collection individu~~ll/ or rn a group. The other Onge settlement is relatively small and devoid of any dev:l~lopment worker within the settlement. There the Onye ? women are more free and still (,~lssue their old style of life But In the main settlement where the development work:rs are statroned the women often have to work according to their guidance and •l~lpervision. Women there are engaged In plantation work. As part of development programme attempt has been made to bring the Onge In the fold of food producing economy by engaging them in plantation works. Coconut plant was first introduce~tcl during the S0s as a source of constant food supply to these people. The plants suited well here and the Onge also got attracted to it. It is only in the late 70s they have been brought under plantation work Two plantation in-charge are thers to look after the plantations and to motivate the Onge in horticulture. The specific jobs in coconut plantation include making the pit, planting saplings, clearing the under~growth, occasional curing the plants and han/esting the fruits. In regard to plantation work a division of labour is maintained among men and women. Men generally do the works like digging the pits, •climbing the plants, while women generally take part in clearing undergrowth in the plantation area. As going for collection of roots and tubers is not a regular job now a days the womenfolk are almost always available in the settlement and they are called for work by the plantation in-charge. The men are found reluctant to plantation work. They often go for pig hunting which fascinates them more. Whether they do the work or not all adult Onge men and women aro enrolled in the muster roll of the plantation work for which they get some Rs. 1001- per month, per head. Though they are paid monthly the works like digging a pit or curing the plants are mostly done by the labourers hired from outside. The Onge men are efficient in climbing the tree to harvest the coconuts.

Women are engaged for clearing the undergrowth. They also do not like the job but When they come for work they do the work sincerely. So the women are considered better change agent. They spend their money as they wish. Their husbands do not interfere in this matter.

Onge men show great concern for their women. They are strictly monogamous. The husband takes utmost care of wife after childbirth. Now a days most of the childbirths take place in the hospital. In the present setup also they follow the traditional method of delivery within the hospital in presence of trained midwife. The husband never leaves his wife alone at the time of child-birth and tries to give her relief in all possible ways. He is the right person to give massage to the wife for quick delivery. In this way husbands always do take extra care of the wives. As there is no such rule that wife should be younger to husband - many wives are thus quite elderly and these elderly wives are most privileged. They still be~is the old values and they do minimum of domestic works. The man cooks for her and at this he never grumbles or feels unhappy. While walking the wife always moves first and the husband follows her. In earlier times the most important function of a wife was to make beautiful designs on her husband's body with white clay. This perhaps work as the emotional padding between the husband and wife. With this work of body painting she can reciprocate to the service and care of the husband. With so-called development these practices are gradually on the wane.

The Onge do not show any preference for male child and no discriminatory practice is observed in their child rearing practices. The custom of bride price or dowry is absent. Puberty rites are equally important for both the sexes. However, the initiation ceremony is very important in the life of an Onge man. It gives him entry to the adult's world, which makes him eligible for pig hunting and marriage In olden times adult marriage was the custom. Now a days due to non availability of mates child marriage is now very much in vogue in Onge society So marriage takes place before the observance of puberty ceremony. However, taboo regarding pig hunting before initiation still persists. In olden times when adult marriage was the custom no girl could be married without her consent. Though there is no formal way of seeking divorce either of the spouses are free to express their mutual disliking. The wife or husband can stay away from the spouse, which indicates their separation. No gender bias is there in this respect. Within short time both of them are free to choose their own mates if they desire so. The Onge do not like living alone. Hence widows are almost instantly married provided there is ne social or kinship restriction in the way of her getting remarried. There is so much dearth of marriageable women among the Onge that a woman is found married number of times sequentially. They are often married with young unmarried youths. Now the situation has reached such a point that when a female child is born she is selected by the parents of a boy. ~now it is almost a known fact who are the tentative couples in the society. This practice of child marriage though not related with the development programme plays an important role in the life of an Onge girl. It plays a very significant role in the process of personality development. Sometimes the man and the girl are of unmatching age. The man may be of 25 years old or even more while the girl is 8 or 10 years old only. At such early age girls generally do not understand the implications of marriage much and no physical relation with husband is developed before puberty. Nevertheless, in such cases, at day's end these husbands spend some time with their chills bride in playful mood. The girl continues to live with her parents only. The Onge parents think that if the couple of such unmatchable age live closely, the girl develops emotional attachment for the man and it also helps the girl to attain maturity. When the girls are about 12 or 13 years old they start living away from their parents with some elderly widowed women. This practice of child marriage cuts short the childhood period in the life of an Onge girl. From the early age, as soon as she starts living with other women her behavior changes. She achieves a kind of maturity and behaves like a woman, though her puberty takes place after 3 to 4 years or even more. It has been observed such girl does not like fun and frolic matching to her age and she is also not equally fit to communicate with grown up women. May be some personality problem might have been cropped up in such case which was once unknown to the Onge. In fact a case of this sort has developed in the bigger settlement of the Onge. The girl was perfectly fit and she is married to a boy matching of her age. Unfortunately when she started living with her husband after puberty she became a psychic case : probably it may be case of depression as she never talks to anybody including her husband. However, her husband is very loving to her and takes every care, which perhaps became possible, for his Onge background of culture. This sort of case needs further probing for which we are not properly equipped. This case is neither attended by the Onge in general nor by the doctors there in particular. Nevertheless, it can be said that a proper childhood is very much needed for transforming an adolescent to an adult, otherwise transformation from childhood to adulthood becomes abrupt. In fact among the present day Onge childhood is very short and the children almost do not pass through adolescent phase. Other phenomena have become more important in transforming a child into a person than physical maturity of the person.

Comparing the life style of the Onge men and women in the perspective of developmental programmes it can be said that the men are more exposed to the outside world. Often they meet more outsiders, come to the nearest market; even then no significant change has taken place in the men's world Onge men enjoy the comforts of modern life but at the core of the heart still they remain, as they were an ideal hunter. In the material world revolution has taken place in their home but they do not become co-sharer of this It is the woman who has to take care of elaborate domestic chores. It is the women who lost the glamour of their original life - they had to pay the price of the development at the cost of their freedom, finer sentiment. The Onge women were equal partners in the society sharing all the joys and pains equally with their men. It was a common world. Now they are forwarding towards a woman's world primarily confined to home, hearth and children. The population is highly vulnerable due to their smallness. Nevertheless, they survive for few more decades, the development will do its works. The process of transformation of Onge woman from a person of independent status to housewife is yet to be completed.

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RECENT DEVELOPMENT IN THE STUDY OF PHYSICAL ANTHROPOLOGY IN THE UNIVERSITY OF CALCUTTA

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Abstract : The developments in the study of physical anthropology are traced since the inception of the Department of Anthropology in 1920 at the University of Calcutta. Researches in the past two decades are presented to a greater extent. It appears that significant contribution to anthropological knowledge was made by the faculties of this Department. The need for research in anthropological problems in the ensuing millennium is emphasized.

Since the inception of the Department of Anthropology, University of Calcutta in 1920 faculties of this Department had conducted pioneering research activities embracing all branches of Anthropology. One of the faculty members Prof. K. P. Chattopadhyay, Department of Anthropology, was renowned scholar in the University of Calcutta for several decades. Prof. Chattopadhyay published more than 100 research papers which showed his substantial contribution in all branches of Anthropology. Research works of Prof. Chattopadhyay and that of other faculty members like T. C. Das, T. C. Roychowdhury, A.N.Chatterjee, D. Sen, S. S. Sarkar and others placed the Department in the academic map of the world. Some of the research contributions of Prof. Chattopadhyay are nasion in the living (Chattopadhyay, 1939), application of statistical methods to anthropological research (Chattopadhyay, 1942), racial affinities of non-tribal (Chattopadhyay, 1951) and tribal (Chattopadhyay, 1952) populations. These were to be considered world standard because of the fact that these analytical and qualitative research works were conducted in physical anthropology and published in international journal of repute such as American journal of Physical Anthropology, Sankhya etc. It is also to be remembered that researches were introduced in physical anthropology in pre-independent India during the decades of 1930s and 1940s.

Later on Dr. S. S. Sarkar initiated for the first time in India research work on different areas of physical anthropology such as blood group studies among tribal populations of India (Sarkar, 1936-37 ; 1940; 1942-43 ; 1947 ; 1949 ; 1952 ; Sarkar and MacFarlane, 1937-38 ; 1941 ; Sarkar and Sen, 1952), twin studies (1944-46), eugenics (1942), racial migration and racial classification of population of India (Sarkar, 1953 ; 1958b), racial admixure (Sarkar, 1959 ; Sarkar et al., 1953), hair studies (Sarkar and Banerjee, 1956), dermatoglyphics (Sarkar, 1962), human genetics (Sarkar, 1943 ; 1951 ; Sarkar et al., 1961 ; Sarkar and Ghosh, 1963 ; Stern et al., 1964) etc. Dr. Sarkar made valuable contribution in various areas of classical/traditional physical anthropology notably racial classification of Indian population, racial affinity of prehistoric and contemporary populations of India, origin and migration of different racial populations in India. Sarkar's interest embraced other branches of anthropology too but mention of those researches are beyond the scope of the present paper. Sarkar's researches demonstrate a high degree of scientific acumen and imagination encompassing biological and social aspects of man. He had firm conviction that knowledge of anthropology could be cultivated and used for development and welfare of mankind.

During the decades of 1960s, 1970s and 1980s student of Dr. S. S. Sarkar, Prof. A. R. Banerjee furthered the tradition of research activities initiated by Dr. Sarkar. Besides researches on hair (Banerjee, 1959 ; 1963a ; 1963b ; 1965), twins (Banerjee, 1974) and dermatoglyphic studies, Prof. Banerjee extended his works in the areas of forensic anthropology (Banerjee, 1973a), growth studies (Banerjee at al., 1985), ABO blood group polymorphism and natural selection (Banerjee, 1988-89), reproductive biology (Banerjee, 1980 ; Banerjee and Nag, 1976), human genetics

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(Sarkar et al., 1961 ; Banerjee et al., 1994), human cytogenetics (Banerjee et al., 1965), congenital abnormalities (Banerjee, 1973b ; 1993) and haptoglobin studies among the Bengalee population. Subsequently a student of both Dr. S. S. Sarkar and Prof. A. R. Banerjee, Prof. A. B. Das Chaudhuri has exerted much effort in the expansion and incorporation of newer areas of research in physical anthropology with emphasis on experimental works in the Department. Some of the major achievements in research work on physical anthropology in the Department are presented below.

Micromorphological characteristics such as diameter, incidence of medullation, area of cross section, weight etc. of human scalp hair had been utilized in anthropology for racial classification/population variability and individual identification since long time without proper knowledge of inheritance of those characteristics. For the first time in the discipline of physical anthropology, an attempt has been made from this Department to investigate and to establish the genetic basis of above mentioned hair micromorphological characteristics by twin method of study (Das Chaudhuri, 1976a ; 1976b ; 1977 ; 1978a ; 1978b ; 1979 ; 1980 ; 1981a), family method of study (Das Chaudhuri and Chopra, 1983) and population study (Das chaudhuri and Chopra, 1984).

In human genetics, zygosity diagnosis of twins into indentical or monozygotic (MZ) and non-identical or dizygotic (DZ) using blood groups or other genetic markers is prior task in order to determine relative role of heredity and environment and their interactions with respect to any trait in man. Indiscriminate use of several conventional genetic markers in the determination of zygosity of twins from a particular population should be discontinued. Because efficient sequential search procedure for twin diagnosis utilizing gene frequency of genetic markers in a population has been developed in the Human Genetics Laboratory of this Department and demonstrated in German population. It is hoped that this method will be helpful in the efficient application of genetic markers to zygosity determination in any population. The formulae developed are quite general and procedure explained can easily be generalized to other situation (Das Chaudhuri, 1991a).

Analysis of trace element of human scalp hair by flame atomic absorption spectrophotometry has been introduced in the discipline of physical anthropology for the first time in India from this Department. Occupational and environmental exposure to lead have been successfully assessed in populations of Calcutta and surrounding areas (Sen and Das Chaudhuri, 1996a ; 1996b).

Quantitative traits in man are controlled by many genes and mode of their segregation in man are still unresolved. Quantitative traits of dermatoglyphic variables are proven to be controlled by not many but few genes. There lies the paramount importance of dermatoglyphics in quantitative human genetics. In the discipline of physical anthropology in India, multivariate methods of factor analysis has been introduced in dermatoglyphics from this Department to throw some light on the problem mentioned above. The four finger and palmar dermatoglyphic factors identified with the family material are (1) factor of general size of finger pattern, (2) a mainline factor, (3) an a-b ridge count factor and (4) an atd angle factor with their heritability estimates 0.67, 0.66, 0.52 and 0.20 respectively. The problem remains to be solved to what extent these factors can be equated to genes. Extracted factors support the field theory of Butler (1963) that each finger is a discrete part of digital complex comprising ten fingers and not a separate unit acted on independently by genes involved (Das Chaudhuri and Chopra, 1983).

Difficulty in sectioning the hair which is ectodermal in origin with its content of a sulphur-containing protein, hard keratin and its resilience is experienced by workers. Martin's (1928) method can be assigned as one of the earliest methods used for preparing cross section of human scalp hair. Some modifications over Martin's method of hair microtechnique are developed in the laboratory of this Department for preparing guaranteed high quality section of human scalp hair (Das Chaudhuri, 1981b).

In an investigation into the problem of the relative role of hereditary and environmental variation in determining 28 body measurements, family resemblance approach to an endogamous Mahisya caste population of rural West Bengal has been utilized. In this work, advanced biostatistical methods such as polynomial regression i.e. multiple regression analysis and the method of fitting multiple Logistic Regression model have been employed. Physical anthropologists from very few research institutions or universities used these methods in analysing anthropometric data but only in collaboration with scientists in abroad. Credit goes to Human Genetics Laboratory of this Department because in India researchers of the above laboratory independently employed those biostatistical methods to analyse anthropometic data (Das Gupta, 1994 ; Das Gupta et al., 1997)

Primate studies either on fossils or living is an integral part of human evolution and so also of physical anthropology. Preliminary research on primate studies had been introduced in the Department (Das Chaudhuri, 1991b ; Das Chaudhuri and Roy, 1989).

Twin research still today mainly limited to mere determination of twinning rate in different populations. At the most factors responsible for twinning were studied A new approach was made for interpretation of twinning rate in inbred population (Das Chaudhuri et al., 1993). This is a part of a Major Research Project, U.G.C. where nearly half million birth records were collected for twin studies from different hospitals of Calcutta and its suburbs Qualitative experimental work on twin research has been initiated in this Department with financial assistance from C.S.I.R. on a problem entitled 'Determination of the role of heredity and environment on the effects of cadmium treatment in vitro on certain functional parameters of human blood corpuscles using twin studies'. The research work on the above problem has been completed and the results are to be published very soon.

A laboratory with a culture room has been built up in the Department for doing human cytogenetical works involving specially lymphocyte culture. A preliminary work concerning cytogenetics and anthropometry on patients with down syndrome has already been published (Das Chaudhuri, 1996).

Concerning ongoing research activities in newer areas of physical anthropology special mention needs to be made relating to the problems entitled (1) A study on the cytogenetic basis of human male infertility and (2) Anthropometric-hormonal correlation in fertile and postmenopausal women from West Bengal. A unique research model in twin genetics involving a problem, 'estimates of genetic and environmental variances for body measurements simultaneously from twin and family data', presently supported by I C.M.R., is being continued.

In the past five years sponsorship of DSA in the Department has opened up basic infrastructural facilities for doing molecular biological studies from the subdiscipline of physical anthropology. A programme on the use of microsatellites in zygosity diagnosis of twins has been proposed.

Foundation of twin research in India was first laid down by the predesessors of this Department. But it is to be noted that it is only in the present decade significant contribution on twin research was made pertaining to the international trend.

As mentioned earlier, the utility of trace element study in hair was realized and introduced in physical anthropology in India by the faculties of this Department. In industrial/urban area, environmental pollution remains a global problem. Population occupationally exposed to an environment and assessment of its effect by applying experimental method and technique will definitely open a new dimension in physical anthropology for future researchers.

To conclude it may be inferred that significant contribution to anthropological knowledge was made by the faculties of this Department in the past two decades in areas of twin genetics and quantitative human genetics Credit goes to this Department for the use and introduction of atomic absorption spectrophotometry and cytogenetical technique in understanding anthropological problems. Emphasis on researches is required to be intensified on cytogenetical and molecular biological works related to anthropological problems. This emerging field of interest is going to take its stride in the ensuing millennium.

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HOMINID AND HUMAN ORIGINS : HOW TO LOOK AT THE INDIAN EVIDENCE IN WORLD PERSPECTIVE

A. R. Sankhayan

Stock-taking at the turn of the Century of the Indian / Sub-continental evidence for the origins of the human family and the specis *Homo sapiens* reveals a long period of human natural history spanning about 12 million years (Myr). This period could be divided into three phases for convenience of comprehension, namely : (1) the Hominoid Phase (12-5) Myr BP), (2) the Proto human / hominid Phase (5-2 Myr BP), and (3) the Human Phase (2 Myr BP to Recent). The Hominoid Phase is documented by the fossil remains of Ramapithecus (now preferred to be sunk into the taxon *Sivapithecus* showing beginning at 12.3 Myr BP (Kappelman et al, 1991) and the last occurance documented at 5.5 M. yr BP (Sankhyan, 1985) in Indian sub-continent. The proto human / hominid phase in conspicuous by the lack of fossil evidence in Asia and therefore a source of bewilderment and speculations. The beginning of the Human Phase in hazy in Asia until about 1.5 Myr BP except for the claims of the earliest lithic artifacts. The unequivocal fossil evidence of the Early Stone Age man in India / South Asia is at present of about a half million year's antiquity. It has come from the Boulder Conglomerate Alluvium of the Central Narmada basin of Madhya Pradesh after a Century prolonged anticipation in 1980's. A solitary right calvaria (Sonakia, 1984) and a right clavicle (Sankhyan, 1997 a & b) 4,5 associated with the Acheulian artifacts and fauna are on the record.

Notwithstanding a clear documentation of a hominoid and the human phase on the Indian subcontinent, the last 15 years have witnessed an interpretative turmoil in Indian / Asian palaeoanthropology.New developments especially in the field of molecular phylogenetics, and as a consequence, a shift from the doctrine of Darwinian Gradualism to the "Punctuated Equilibrium" with associated switch over from the traditional 'grade' and 'phenetic' methods to the 'cladistics', have reversed our long-held opinions on Asian Ramapithecus and Homo erectus. Further, adherence to the 'Single (African) Orgins', and the 'human-African ape late divergence' theories advocated by the molecular "clock" fueled the makeshift of the palaeoanthropologists. Accordingly, Ramapitheclus is put into the 'Pongid Waste Basket' and Homo erectus is discarded as a 'sterile' branch of Homo and not responsible for the birth of Homo sapiens. The fate of the Narmada Homo is also therefore similarly conceived through it tossed from a Homo erectus (Lumley & Sonakia, 1985) to an "archaic" Homo sapiens (Kennedy et. al., 1991).

The gloomy picture prevailing on Indian/Asian palaeoanthropology, however may not scare us to be out of our jobs. There are numerous flaws, divergent views and unsupportable contentions in the popular view, which provide enough opportunities for further explorations, reconsideration as well as alterations of the valued current opinion. This author has pointed out such lacunae in his earlier reviews and overviews on the Ramapithecus debate (Sankhyan, 1998). Here it is worthwhile to re-focus the entire hominoid and human fossil evidence from the sub-continent for placing the same in the broad Old World perspective. Some of the more important observations/inferences of the present overview may be started below.

1. The early chapter of the hominoid evolution (20 – 14 Myr. BP) may be read in Africa, but the later part of the same (13 – 5 Myr BP) is faint on that continent but well presented in Asia and Europe, especially inthe Indian subcontinent. But peculaiarly the Proto-human

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A. R. Sankhayan, Anthropological Survey of India

phase is clearly depicated in African but omitted on unrecorded from the subcontinent including Asia as a whole. The terminal, i.e. the Human Phase seems to be a universal or Old World event.

2. It emerges as if the natural history of hominoid evolution and hominid origins has been an inter continental event and is incomplete on African or Eurasian continent alone. As such, the glorificatory usuage of "cradle of mankind" for Africa or any other single continent reflects historical biases that have largely influenced our interpretations of the hominoid phylogeny.
3. 'African ape - human late divergence' fromt the last common ancestor exclusive of the orangutan (Asian Great ape) appears to be a myth since no hominoid recovered so far qualifies for the exclusive 'African ape - hominid' ancestry. Interestingly on the contrary, the totality of the hominoid evidence of the Old World support a more parsimonious 'Asian great ape - hominid' clade. Ramapithecus Sivapithecus, Lufengpithecus, Graecopithecus, Dryopithecus, Kenyapithecus, Afropithecus - all fall on this clade. The popular interpretation of the polarity of the molecular affinities weighted heavily against the morphological / stratophenetic, are therefore a suspect and recall for a reconsideration.
4. Fossil evidence does not support the presumed terrestrial 'knuckle-walking' preceding the hominid erect posture, but rather a generalised arboreal hanging and climbing (not brachiation) as pre-adaptation for erect posture.
5. The new (postcranial) evidence of the Narmada Homo suggests a robust, short and stocky man addapted for a tropical ecology. It differed drastically from European early men : H. neanderthalensis and H. Heidehergensis as wellas from African Homo erectus (= H. ergaster). It also helps in resolving the H. erectus/H. sapiens debate on its calvarium.
6. The cranial as well as postcranial evidence of the Narmada Homo together reveal that H. erectus is intimately related to H. Sapiens evolution. Probably, we may visualize Central Narmada Valley as haven and refuge for the Pleistocene hunter-gather in view of severe climatic conditions in the northern part of the subcontinent during Middle Pleistocene.
7. The doctrine of 'Darwinian Gradualism' is not threatened by 'Punctuated Equilibrium'. The latter only explains the gaps in fossil record. But if the voids are unreal and due to the vagary of chance, punctuation is uncalled for. The cladistics is useful among extant taxa, but the relationships among the fossil species are better explained by the 'grade' concept, though both 'grade' and 'clade' concepts are helpful in generating different different scenarios. (Sankhyan, 1999)9
8. Rigorous explorations in the Late Miocene to the Quaternary of India are contemplated for supplementing our findings and filling the voids.

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MEGALITHIC A — PRIMITIVE CULT : SOCIAL ANTHROPOLOGICAL PERSPECTIVE

Dr. Manibrata Bhattacharyya

Abstract : Prehistoric megalithic cult has got a continuity even in the present day sepulchral customs of the Bhumij tribe living in West Bengal, Bihar and Orissa. It reflects some aspects of social structures of a tribe concerned. At the cognitive level, it symbolically represent fertility, birth etc. By studying the rituals associated with the erection of megalithic monument and noting the participants in such activity, we get important insight and relevant data valuable in the study of society.

Ethnoarchaeology is a new branch of anthropology, which aimed at the study of the archaic and primitive cultural traits. The traits once prevalent in socio-religious life of some contemporary society are now declining very steadily. It is high time to record how these traits are woven into the matrix of socio-cultural life of the people concerned. In Indian context some archaic traits are still prevailing among the tribal people. The presence of Megalithic custom among the tribal people is such an example where ethnoarchaeological approach seems to be fruitful one in understanding the megalithic cult in socio-cultural context.

Megalithic structure and associated ritual acts have wide distribution both in contemporary tribal and prehistoric contexts. A few megalithic structures have been reported from the middle reaches of the Tarapheni valley. Once stone circle structure was located at Dumurgonda. A number of menhirs have been also found at different places of Purulia district. The Bhumij, a branch of Mundari speaking Hinduised tribes are still practicing this prehistoric cult. The place where they ceremonially dispose the calcined piece of house putting into a pot and ritually place a stone slab, capstone, covering the pot in known as semsan. Each maximal lineage has got its own samsan (crematorium) traditionally. They believe that this is the dwelling place of the deceased ancestors. In connection with living megalithic practice it is found that they build two types of structures at two different stages of secondary disposal. At first they build menhir and thereafter they build a subterranean structure, where a capstone, is placed over four pieces of stone which they call khuta or posts for supporting the roof cap stone. This primitive cult is considered here as an object of ethnoarchaeological study. The present study was carried out among the Bhumij of the borderland of Singhbhum, Purulia districts and eastern part of Chotanagpur plateau in late nineties. In prehistoric context South and Central Indian megalithic structures are considered as complementary one. The basic reason for undertaking such a kind of study is to evaluate how far living megaliths are related to prehistoric megaliths. An ethnographic document of the relevant details of the rites and beliefs associated with the megalithic colt is also within the scope of this paper In the context of occurrence of the megalithic cult both in the prehistoric past and ethnographic present is assumed to be showing a continuty in future. The cults are associated with sepulchral rites. Here mode of disposal is secondary. The basic structure of the grave comprises a chamber, a passage leading to the chamber and stone structure in almost all cases. The megalithic structure is erected at a separate place, a cemetery for secondary disposal is situated away from the human settlement as well as from the place of primary disposal, i.e., the cremation ground. But such differences do not negate the close relation that exists between living and prehistoric contexts. However, two famous scholars, Wheeler (1959; 151) and Haimondorf (1945, 73, 86) have noted overwhelming differences between past and present megalithic practices. They have considered that those differences are relatively greater than the resemblance between megaliths practised present day by the tribal people and the prehistoric megaliths At the same time it has also been noticed by Wheeler that the Khasis' megalithic custom approaches closer to the dominent prehistoric megalithic custom The main contention is that the Khasis collect periodically the bone of clan members and deposit them in a free standing cist. But except a few, most of the archae-

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ologists support the view that prehistoric megalithic custom was introduced from West Asia by a people who knew the use of iron.

At the present day, the megalithic custom is prevailing among the tribals of south, central and northeast India. Chenchu, Irula, Kadar, Kota, Kurumba, Paniyan, Pallan and Toda practise megalithic customs. Some scholars try to establish that prehistoric megalithic builders are the ancestors of the present day tribes. In central India, the traces of megalithism have been observed among the Gadabas, Bondos, Mundas, Oraons, Hos, Bhumijs, Sourias, Baigas, Gonds and Bhils. Haimendorf (1945) has recorded the megalithic rites of Gadabas and Bondos in Orissa and Elwin among Maria Gonds of Baster. Besides, other ethnographers have indicated the presence of this custom 'Dum' to which they relate the death rites of the above tribes. It is now presumed that the megalithic monuments of these tribes lost their sepulchral function and become commemorial (Krishnaswamy 1949 : 41).

Following Haimendorf and others descriptive accounts on tribal megalithic practices Krishnaswamy stated that the megalithic structure mainly are menhirs and their alignments, dolments, stone circles and stone seats.

In the northeast India the megalithic practices have been found among the Khasi, Naga, Mikir, and Garo. Haimendorf thinks that the megaliths of the tribal people of northeast India and central India are of south-east Asiatic type. These were introduced here with the migration of the Austro-Asiatic races. Krishnaswamy (1949) has also supported this view and has gone further stating that the migration occurred in neolithic time. But a number of archaeologists including Childe (1947 : 3) held the view that this cult had been introduced from west Asia. Except a few, most archaeologists agreed upon that the megalithic builder knew the use of iron. However, the main intention of this study is not to trace the genetic relation of megalithic customs of the present day tribal people and the prehistoric community nor to trace the diffusion of this cult. In fact attention has been given here to reveal the pattern of megalithic rites, symbolic meaning of the rites and their function. As mentioned earlier, the present study concerned mainly Bhumij, a Mundar tribe of eastern part of Chhotanagpur who forget their original language and for centuries together speak in local Bengali dialect called panch mahaliya. Among all other communities of eastern Chhotanagpur and Bhumij still practice with moderate sincerity this prehistoric cult as an important part of their traditional death rites.

The rites associated with the megaliths are practised as a part of death rites of the Bhumij. These have been described below in brief

The death rites of the Bhumij are performed in different stages : at the first stage, it includes preparation of the corpse and transportation of the corpse from the house to cremation ground. Second phase starts with the collection of calcined bones and bringing these hones back to the hours. Third stage begins with the preparation of the calcined bones, transportation of the bones to the cemetery, and erection the megalithic structure. At the fourth stage, communal feast of the community denotes the union of the bereaved with the community. Besides, they also perform sets of rituals identical with the caste Hindus and these are performed by appointing a (degraded) Brahmin priest and a Vaishnab. These riturals performed under the instruction and advice of the Brahmin and the Vaishnab are not much relevant with the objective of the present study of the megalithic cults. The rituals with megaliths encompass those which are performed in the end of cremation and associated with the collection of the calcined bones and continued to be observed till the end of disposal of the bones in the grave.

After a sequence of ritual performances by the family members the corpse is cremated placing it on a pyre. When the corpse is about to be consumed completely by the flame, a small portion of half burnt flesh is kept away. They ceremonially bury this half burnt flesh into a hole on that day in the cremation ground. Then they erect a monolithic structure by placing a piece of stone vertically upon the grave It is important to mention that each family has a particular place where the dead members of the family are cremated. In that cremation ground the place and location of the grave with the erected stone are determined on the basis of social position, seniority and relationships of the deceased in the family.

According to the Bhumij, this ritual is a part of sepulcharal rites. Before the burial of the half burnt of flesh or bone of the deceased, it is their custom to drench the pyre with flow of water and to cool it down by blowing air. It is the duty of the female members of the family to do all these ritual acts. It is worth to be noted that the female members do not attend the cremation. When the body is about to be extinguished, the women are informed to be present there. Then the women come and pour down water from pitcher to extinguish fire. The wives of the deceased's sons fetch water from the tank with the earthen pitchers and the blazed spot of the cremation ground is soaked with water by them. When the wives made a flow of water from the earthen pitcher the sons keep them busy by blowing air with the winnowing fan. Hence, in the rituals of drenching and cooling the pyre (in their term jhulaphakla) both the husbands and the wives respectively take part. The idea behind this ritual is very symbolic. The pouring down water, like rain and soaking the blazed spot with water, like fertilizing the earth and putting the portion of half burnt flesh into a hole or grave like seed, have been certain deeper meanings related to fertility, birth. It is also worth mentioning that the Bhumij believe that they are originated from the earth. Hence, the idea behind this rite is that man, represented by the half burnt flesh, goes back into the womb of the earth from where he has come and where from he will come again. Such encoded symbolic acts reveal the fertility cult as well as rebirth.

After quenching and colling the lighted pyre, the important task is to collect the calcined bones of the corpse. It is the married female members of the family. In fact, the dead person's sons' wives, who are to collect the calcined bones. The collectyed calcined bones are kept either in a container made of sal leaves, locally known as khala, or in a small earthen ware. Then the ritual of preparation of the collected bones is performed. It includes smearing the bones with the turmeric paste, which they have to bring from the house. The deceased's son's wife smears the bone with the turmeric paste. It is locally called hare halud. The yellow colour of turmeric turns red when the bone and turmeric paste are mixed up. The red granules and liquid of the mixture are explained as blood coming out of the bone and that the bone is crying (as does a new born baby). It is in people's cognition that the bones have the same life and physical sensibility as that of the man what he had when he was alive. It is not out of context to mention a few points in connection with turmeric paste, tel halud rite. The same rite is to be observed in connection with the preparation of the deceased before cremation. We will see very shortly that the same rite is to be performed at every stage of life when the status of the deceased is changed. Furthermore, this rite is also observed in connection with birth and marriage. However, after the preparation of the bones the container with the bones in it is wrapped with a piece of new cloth. Then the whole funeral party leaves the cremation ground and get ready to observe sequence of purificatory rites, ablution in the tank, touching sacred objects, smelling sacred smoke etc. When funeral party comes back to home the bones are carried by the deceased's son's wife all the way to the house. The collected bones and the container wrapped with the new strip of cloth are kept in a pit dug at the front of the basil plant alter. The pit is filled with soil and covered by placing a stone slab. It is kept there for a couple of days for disposal.

The next step is the transportation of the bones for disposal. It is performed on the third day counting from the day of death. On the third day in the morning, besides family members, the relatives of both the categories, consanguinal lineage members and affinal (Kutum), are called for to attend the ceremony. The son of the deceased dibbles and opens the enclosed pit where the bones were kept. The son's wife takes the bundle and opens it in order to bring the bones out of the container. Now a days, it is a practice among the Bhumij to keep a few pieces of bone apart which they immerse into the holy Ganga. But in former times, all these calcined bone pieces were taken to the cemetery and disposed there. In case the deceased is female the bones should be handed over to her father's or brother's family. There is a current proverb among the Bhumij that flesh of women is given to her man in marriage but not the bone (mansh thichi hanr thini). In fact, it is decided in the marriage ceremony whether the bone will be returned to her family of origin or it could be kept with the family where she is going to be incorporated as one of chief partners. However, when the bones of the deceased return to her family of origin, it is the duty of that family to dispose her bone at the proper place.

The bones which are to be burried are kept in an earthen ware and treated again with turmeric paste keeping them in the ware. The widows are not allowed to participate in this rite. Then food, drinks, and tobacco are offered to the deceased placing those items in front of the earthen ware containing the bones. A cake prepared with the powder of the parboiled rice and molasses, locally known as gur pith (molasses cake), is placed upon the mouth of ware as a lid to cover the mouth. Then the son's wife, putting the ware on her head becomes ready to leave for the cemetery, locally known as Sasnan. The cemetery is situated in the original village established the founder. So it is found that the cemetery for a particular family lies far away from the present settlement and they have to walk long way to reach there. It has been stated that for a particular clan there are more than two cemeteries. So, it appears that the cemeteries are distributed maximal lineagewise and, it is important to note that the marriage may take place within the clan but it must not be among the members who have a common cemetery.

For each cemetery there is a caretaker, rakha, who knows the details about the genaeology of the graves. In the cemetery, there are innumerable number of graves arranged in rows. It is very difficult to locate the exact row of the graves for a particuler lineage to which the family belongs. It is the caretaker, rakha who can locate the exact place for the respective family. The place of the grave is selected on the basis of seniority and the relationship of the deceased in the lineage and family.

On the way to cemetery the party carrying bones for secondary disposal should have to stop at least three times and at each time the deceased is appeared with the drinks and tobacco. It is worth mentioning that similar halting exercise is to be observed when the corpse and the funeral party are on the way to the cremation ground. Before the arrival of main party carrying the bones some selected persons with at least one male member from the family of the bereaved go out in search of suitable stone slabs which are essential for building the structure of the grave. They collect five stone slabs of which four are comparatively smaller in size but more thick, elongated and rectangular in shape and the fifth one is thinner, wider and more flat. They carry the stones from a nearer source usually outcrops or hillock. It is the custom that they should not leave the stone which has got the first attempted stroke from their picks. Other men of the party as per instruction of the caretaker, rakha, begin to dig a pit for building the structure of grave. The pit digging must be carried out by the family members. A lineage member can also do it but the first stroke of spade to the ground should be initiated by the eldest son of the deceased or by any male member of the family. The digging has been carried out in such a manner that when it is completed there is a comparatively deep, big and round pit with a shallow and narrow passage leading to the pit. When the digging operation is nearing completion there is an important rite, a rite of parambulating the row of the graves of the ancestors. The deceased's son's wife carries the ware containing the bones and parambulating the row of the graves while her husband follows her by sprinkling of sun dried rice and water. They explain that by perambulating, the deceased is introduced to the ancestors. After this solemn act of introducing the deceased to the lineage of ancestors the pit is lined and covered with stone slabs. The grave gets final touch when the four thick, elongated stones are placed at the four corner of the pit and the big, wide, thinner slab, the cap stone, is brought to cover the opening of the pit resting on the four stone posts, the Bhumij explain that the four stone piece are Khunta, the posts of a hut and the big and wide slab, is chatan, the roof. Hence, this structure is the house for the deceased and the cemetery is the land of the ancestor community. The acts of drawing a figure on the capstone with turmeric paste further attested the fact of animation and achieve status of the deceased as a member of the community of the ancestor. The food and drinks are again offered to the figure which stands for the deceased. The, most vital issue at this stage is to install the deceased into, ancestral community by placing the earthen ware containing the calcined bones of the deceased in the grave. The chief role is played by the deceased's son's wife. She is very careful to insert the ware with the bones into the pit and to install it therein. The ware is placed in such a way that the upper part of the ware is opened or exposed to the outside through the passage leads to the pit. On the mouth of the ware there is the cake of perboiled rice and molasses which is placed there to cover the open mouth of the ware, as a lid. The main intention behind this sort of arrangement of placing the ware in the grave is to facilitate the rites of piercing the cake at the cover of the ware. The local term for this rite is pete binda, piercing the abdomen or out a passage through the abdomen. The implied idea behind this act is begetting. This ritual is performed by a man who belongs to that category of kins with whom the deceased's family has marital relation. Armed with a bow and an arrow the distal end of which is tied with an open ended thread, the man comes near to the grave and release the arrow in such a way that it pierces the covering cake through the narrow passage leading to grave. After ritual of piercing the cake, he takes the open ended thread and pushes it into the ware so that the thread can be placed in touch with the bones. One end of the thread is kept in contact with the ware and the other end is kept in touch with the cake. Here, the cake is assumed to be the placenta and the bone the embryo that takes its nourishment from the cake or placenta.

After this the opening of the grave is closed by putting a bark of sal tree at the passage. They explain that this bark of sal tree is the door, hoorka, so far the rituals associated with the grave are concerned this is the last rite. The implied meaning of the rite is to protect and shelter the begetted one. The begetted one is, sheerly, a new member of the ancestor's community. Now, as the deceased is placed and integrated into the ancestors' community, the bereaved persons also observe a similar and complementary rituals by which they are also integrated into the society. It is achieved by a community feast.

The communian feast which integrates the bereaved persons with the society is locally known as tita vat. The term is very important and it implies something about the status and liminal condition of the bereaved ones. They are actually in between and betwixt situations.

It has been noticed in parambulating ritual that by feeding the ancestors done with the deceased the latter has achieved the status by which he is incorporated into the ancestor's community. The same is happened in case of the livings, by offering a communion feast the lost status of the bereaved is regained.

In the evening of the same day they observe the rites of communion feast. The main items of the feast are cooked rice, lentils and curry of vegetables and all these items are supplied by the bereaved. The man who cooks in the feast belongs to the same house who performs the rites of opening the abdomen, pet binda. After cooking all the items are arranged in a leaf plate and this is offered to the dead person. They offer the food at the place where the deceased took his last breath. The son of the deceased, the chief mourner, offers the food to the deceased. After offering he goes at the village boundary taking food in a brass bowl and holding a wooden stick in the hand, he invokes the deceased by term of relationship and invites him to eat the offered food. He comes back to the house and it is believed that invocation has its effect and the deceased comes and enjoys the food which is offered to him. At this time none is allowed to enter the room where food are offered to the deceased and that is the place where he died. Thereafter the affinal and consanguinal relatives along with the bereaved family members take their seats and eat the food offered to them. It is the male members who take their seats first then come the female members and enjoy the feast. The symbolic meaning of the feat is communion of the bereaved with the affinal kins who represent the society. And by this rite their previous position that they enjoyed before death is restored and they are incorporated in the society.

The expression of unconscious processes are manifest in various forms in the structural aspect of a society. This megalithic cults are not simple expressions of their faith in ancestral world or only in thing like this. The root of such cults are embeded in the deeper reach of the society. An enthroarcheeological approach brings such cultural materials into our knowledge. An indepth analysis in the perspective of structural Anthropology is a must in this context for the understanding the cognitive process of human mind that is at work and is reflecting the ideological pattern that gives a particular shape to the existing society. To establish the relavance of such approach as undertaken in the above mentioned study then one should put equal importance on the archaeological data as well as on the analysis of the archaic customs and beliefs.

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BOOK REVIEW

HINDU-MUSLIM RELATIONS, BY M. K. A. SIDDIQUI, CALCUTTA : ABADI PUBLICATIONS, 1993, PP. VI + 123, PRICE RS. 125/-

Reviewed by :
Sekh Rahim Mondal

The book under review is a modest contribution in the field of anthropology and sociology. It is also an important work in the area of national integration, specially in the context of unity within diversity of Indian civilization.

The main focus of this book is to highlight the different aspects of inter-relationship between the Hindu and the Muslim Communities in India. In the study while describing the different aspects of Hindu-Muslim relationship, the author has drawn our attention to the forgotten realities of racial and linguistic affinities, of sharing of social organizational features, of functional interdependence, and above all of complementary and interlocking character of the two communities in the larger socio-economic framework of the country.

The book consists of four chapters. Chapter one is 'introduction', dealing with the background and objectives behind preparation of this volume. At the very beginning the author has pointed out the problem of two major sets of conflicts in Indian national life viz. inter-caste and inter-community, those threaten the very foundation of Indian culture and civilization. The successive chapters of this volumes provide unmistakable hints to the existence of interconnection between these two kinds of conflicts, though the main theme relates to the various dimensions of Hindu-Muslim relationships in India. To deal with these the author is of opinion that caste conflict has its root in inter-caste relationship, which can not be solved without bringing about a drastic structural change of the caste society and change in the socio-economic status of the down-trodden millions. While approach and communal tensions can be avoided by dispelling false and exaggerated notions and prejudices held by one community with regard to the other.

The second chapter titled 'Hindu-Muslim Relationship : An Approach to the Study', is rather a methodological outline to the study of inter-community relations in Indian context. It describes the methods to be applied to this kind of study and the kind of data to be taken into consideration. Here Prof. Siddiqui has examined how the colonial historians and their followers had ignored the several important aspects of life of the people and how they had been selective in analysing materials to prove their pre-conceived ideas and set pattern of Hindu-Muslim relationship that suited the interests of the colonial power. In this context he further examined how colonial intrusion was instrumental in discouraging the process of acculturation and accelerating the elements of estrangement and conflict between the two communities for consolidation of the colonial power. As opposed to the practice of above colonial approach Prof. Siddique has devoted his attention to find out the association of the Hindus and the Muslims in their common Indian habitat and their functional interdependence for centuries those have produced the basis of Indian civilization. By examining such features Prof.. Siddiqui is of opinion that despite maintaining distinctiveness of their respective cultures, the two communities are otherwise uniquely integrated in the socio-cultural sense, which a responsible obwerver must not fail to notice.

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Chapter three is 'Implications of Majority-Minority Relationship', which attempt to analyses the intercommunity relationship in a different but complementary perspective. Here the author has reviewed the concepts of 'majority' and 'minority' and lay stress on the nature of relationship characterising either dominations of sub-ordination, rather than relative numerical strength of the groups. It also highlighted the fact that, the Indian society began to structure along majority-minority lines since the establishment of British rule in this country. For Colonial interest Britishers infused consciousness of distinct identities as separate groups with divergent interest. At later stage during freedom movement the question of sharing power in future set up of the country remained a factor that sustained and strengthened the colonial structure. Finally, even after independence the structuring of the society along majority-minority line got further impetus owing to economic and political interests of the elite. In the view of the author all these lead to the communalization of the Indian society and that day by day aggravated owing to unhealthy competition of different groups over limited national resources. Prof. Siddiqui remarked that "the estranged intercommunity relationship has the logical effect of infusing greater consciousness of identity and stronger urge for cultural self preservation, particularly among the groups under pressure."

Chapter four is titled as 'Muslims in Calcutta : Aspects of their Relationship with the Metropolis', which speaks about the nature and quality of involvement of the Muslims with social environment of the city of Calcutta. It presents a graphic picture of the systematic arrival of the various Muslim groups in this city right from its inception to the present time. It also gives an account of the whole-hearted service rendered by them in enriching the city life of Calcutta The nature and extent of reciprocation between the Hindus and the Muslims has also been clearly discussed here. The analysis reveals that, at functional level there is a very clear evidence of complementary character of the two societies showing a well-established traditional of freely rendering and receiving of specialized services and that presents a picture of mutual functional interdependence to the extent of mutual exclusiveness. But unfortunately the old colonial pattern of socio-political structure has the tendency to ignore the above set of integration with an intention to show how the two communities poles apart like the two horozons.

By reviewing the overall contents it appears that the present volume is a product of intensive research based on positivistic approach. The studies of this volume are entirely exploratory in character with diagnostic outlook in possible cases. The presentation of facts are both descriptive as well as analytical. With the exceptions of some overlappings and repetitions, the book is well-written. The contents are rich with valuable facts and findings. The title of the book is very catchy and its language is very simple and lucid.

The reviewer feels that this volume is a product of an analysis of the intercaste an inter-community relations on the basis of empirical facts, with special reference to understanding of Hindu-Muslim relations in India. It also bears a wholistic approach towards finding out the integrational aspects between the two communities in socio-cultural arena. Finally, the study has shown how the extent of integration that has been achieved over a number of centuries of association has been facing serious challenge due to political causes. The study teaches us a lesson that the communal problem in India is political in genesis and its has roots in Indian social system i.e. the nature of relationship and interaction between upper and lower castes, privileged and under-privileged classes, dominant and minority segments etc. It has also been shown that the intercommunity conflict began to be accentuated whenever there was a need for diverting attention from caste or class conflicts those emerged to bridging the evergrowing gulf between 'upper' and 'lower' castes or classes to ensure

Notes for Contributors

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Nag, M 1996. *Sexual behaviour and aids in India.* New Delhi : Vikas Publishing House (Pvt.) Ltd.

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